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CFETP 2E2X1  
Parts I and II  
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# **AFSC 2E2X1**

## **NETWORK INFRASTRUCTURE SYSTEMS**



## **CAREER FIELD EDUCATION AND TRAINING PLAN**

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**NETWORK INFRASTRUCTURE SYSTEMS  
AFSC 2E2X1  
CAREER FIELD EDUCATION AND TRAINING PLAN**

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**NETWORK INFRASTRUCTURE SYSTEMS  
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**PART I**

***Preface***

1. Resource constraints in the Air Force are impacting the availability of our most valuable resource-- people. This condition, which will continue to exist in the future, makes it essential for the workforce to be effectively and efficiently trained to perform duties within each skill level of an Air Force Specialty (AFS). To meet the challenges of tomorrow the Air Force must place a greater emphasis on career field training. This Career Field Education and Training Plan (CFETP) is a management tool that enables the Air Force and each MAJCOM to place the needed emphasis on total career field training. It provides the framework and guidance necessary to plan and develop a career field training program. The plan, which is a "training road map" for the career field, identifies mandatory and optional training requirements. It includes initial skills, upgrade, and continuation training that individuals should receive during their career in this specialty.

2. The CFETP, which documents the career field training program, consists of two parts. Management uses both parts to plan, manage, and control training.

2.1. Part I, Section A, provides the information necessary for overall management of training in the career field. It contains administrative details and explains the purpose and use of the CFETP. Section B provides a description of the specialty, suggests career field progression, provides career field information, documents training decisions, defines each skill level, and identifies MAJCOM continuation training options. Section C specifies qualification requirements for upgrade/progression in each subsequent skill level in the career field. It also identifies sources of training other than those provided by the Air Education and Training Command (AETC). Section D identifies known resource constraints.

2.2. Part II of the CFETP contains the Specialty Training Standard (STS) and identifies the various training sources and courses available to members of the specialty. The STS is comprised of the Course Training Standard (CTS), Specialty Training Standard (STS) and the Career Training Guide (CTG). The STS includes the tasks and knowledge requirements for award of the three skill level. The CTG includes task and knowledge requirements for upgrade/progression to subsequent skill levels and identifies career development course (CDC) subject content. Supervisors and trainers at the unit level use Part I, Section C, and Part II of the CFETP to identify, plan, and conduct unit level training commensurate with the overall goals of this plan.

3. Use of the guidance provided in this CFETP ensures individuals in this career field receive effective and efficient training at the appropriate points in their careers. This plan enables the Air Force to train today's work force for tomorrow's jobs.

## ***Abbreviations/Terms Explained***

This section provides a common understanding of the terms that apply to the Network Infrastructure Systems Career Field and Education Training Plan.

**Advanced Training (AT).** A formal course of training that leads to a technical or supervisory level of an AFS. Training is for selected airmen at the advanced level of an AFS.

**Air Force Enlisted Classification Directory (AFECD).** The official directory for all military enlisted classification descriptions, codes, and identifiers. Establishes the occupational structure of the Air Force enlisted force. The occupational structure is flexible to permit enlisted personnel to specialize and develop their skills and abilities while allowing the Air Force to meet changing mission requirements. Individual enlisted personnel have a joint responsibility with commanders and supervisors at all levels to fully develop their abilities consistent with Air Force needs and within the established patterns of specialization. Replaces AFI 36-2108.

**Air and Space Expeditionary Force (AEF).** An organizational structure composed of force packages of capabilities that provide war fighting combatant commanders with rapid and responsive air and space power. The AEF concept utilizes 10 individual force packages and is designated AEFs one through ten. The ten AEFs together with their support and command and control elements are tailored to meet specific combatant commanders' requirements across the spectrum of response options. An AEF, by itself, is not a deployable or employable entity. Rather, AEFs deploy within an AETF as air and space expeditionary wings, groups, or squadrons.

**Air and Space Expeditionary Task Force (AETF).** A deployed numbered air force (NAF) or command echelon immediately subordinate to a NAF provided as the US Air Force component command committed to a joint operation.

**Air Education Training Command (AETC).** Responsible for the recruiting, training and education of Air Force personnel. AETC also provides pre-commissioning, professional and continuing education.

**Air Force Career Field Manager (AFCFM).** Representative appointed by the respective HQ USAF Deputy Chief of Staff or Under Secretariat to ensure that assigned AF specialties are trained and utilized to support AF mission requirements.

**Air Force Institute for Advanced Distributed Learning (AFIADL).** Provides instructional opportunities that go beyond the confines of the formal classroom. Offers professional military education, career development, and specialized technical courses. AFIADL is accredited by the Distance Education Training Council (DETC) which is one formal body recognized by the U.S. Department of Education to give accreditation to distance-learning programs.

**Air Force Job Qualification Standard (AFJQS).** A comprehensive task list that describes a particular job type or duty position. Supervisors use the AFJQS to document task qualification. The tasks on AFJQSs are common to all personnel serving in the described duty position.

**Air Force Qualification Training Package (AFQTP).** An instructional course designed for use at the unit to qualify or aid qualification in a duty position, program, or on a piece of equipment. It may be printed, computer-based, or other audiovisual media.

**Air Force Specialty (AFS).** A group of positions (with the same title and code) that require common qualifications.

**Career Field Education and Training Plan (CFETP).** A CFETP is a core training document that identifies: life-cycle education and training requirements; training support resources, and minimum core task requirements for a specialty. The CFETP aims to give personnel a clear path and instill a sense of industry in career field training. CFETPs are officially posted at <http://www.e-publishing.af.mil/>.

**Career Training Guide (CTG).** A document that uses Task Modules (TM) in lieu of tasks to define performance and training requirements for a career field.

**Certifying Official.** A person assigned by the commander to determine an individual's ability to perform a task to the required standard.

**Computer Based Training (CBT).** A forum for training in which the student learns via a computer terminal. It is an especially effective training tool that allows the students to practice applications while they learn.

**Command, Control, Communications, and Computers:** The specialized field concerned with the use of the operational continuum. C4 systems include base visual information support systems. ([Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms](#))

**Command, Control, Communications, Computer, Intelligence and Reconnaissance (C4ISR).** Integrated systems of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications designed to support a commander's exercise of command and control through all phases of

**Communications-Electronics (C-E).** The specialized field concerned with the use of electronic devices and systems for the acquisition or acceptance, processing, storage, display, analysis, protection, disposition, and transfer of information.

**Continuation Training.** Additional advanced training that exceeds the minimum upgrade training requirements and emphasizes present or future duty assignments.

**Core Task.** A task AFSCM's identify as a minimum qualification requirement for everyone within an AFSC, regardless of duty position. Core task may be specified for a particular skill level or in general across the AFSC. Guidance for using core task can be found in the applicable CFETP narrative.

**Course Training Standard (CTS).** A standard developed for all courses not governed by an STS, including specialized training packages and computer-based training courses.

**Critical Tasks.** Critical Tasks are tasks that require specific training and certification above and beyond other tasks. Tasks may be defined as critical either through AFI, Technical Orders, higher headquarters, or at any level in the unit.

**Direct Reporting Unit (DRU).** Air Force subdivisions directly subordinate to the CSAF. A DRU performs a mission that does not fit into any of the MAJCOMs. A DRU has many of the same administrative and organizational responsibilities as a MAJCOM. (Example of a DRU: USAF Academy)

**Enlisted Specialty Training (EST).** A mix of formal training (technical school) and informal training (on-the-job) to qualify and upgrade airmen in each skill level of a specialty.

**Exportable Training.** Additional training via computer assisted, paper text, interactive video, or other necessary means to supplement training.

**Field Operating Agency (FOA).** FOAs are subdivisions of the Air Force directly subordinate to a Headquarters US Air Force functional manager. An FOA performs field activities beyond the scope of any of the MAJCOMs. The activities are specialized or associated with an Air Force-wide mission.

**Go/No Go.** In OJT, it is the stage at which an individual has/or has not gained enough skill, knowledge, and experience to perform a task without supervision.

**Initial Skills Training.** A formal school course that results in an AFSC 3-skill level award for enlisted or mandatory training for upgrade to qualified officers.

**Instructional System Development (ISD).** A deliberate and orderly (but flexible) process for planning, developing, implementing, and managing instructional systems. It ensures personnel are taught in a cost efficient way the knowledge, skills, and attitudes essential for successful job performance.

**MAJCOM Functional Manager (MFM).** Manager for all matters related to the training and utilization of individuals within a particular MAJCOM and AFSC. The MFM is appointed to oversee the technical aspects of an AFSC and provide management advice to directorates regarding maximum mission effectiveness, career progression, effective training, and processing temporary duty assistance requests.

**Major Command (MAJCOM).** A MAJCOM represents a major Air Force subdivision having a specific portion of the Air Force mission. Each MAJCOM is directly subordinate to HQ USAF. MAJCOMs are interrelated and complementary, providing offensive, defensive, and support elements.

**Occupational Survey Report (OSR).** A detailed report showing the results of an occupational survey of tasks performed within a particular AFSC.

**On-the-Job Training (OJT).** Hands-on, over-the-shoulder training conducted to certify personnel in both upgrade (skill level award) and job qualification (duty position certification) training.

**Proficiency Training.** Additional training, either in-residence or exportable advanced training courses, or on-the-job training, provided to personnel to increase their skills and knowledge beyond the minimum required for upgrade.

**Qualification Training.** Hands-on, task performance based training designed to qualify airmen in a specific duty position. This training program occurs both during and after the upgrade training process and is designed to provide skills training required to do the job.

**Resource Constraints.** Resource deficiencies (such as money, facilities, time, manpower, and equipment) that preclude desired training from being delivered.

**Skill Training.** A formal course that results in the award of a skill level.

**Specialty Training Package and COMSEC Qualification Training Package.** A composite of lesson plans, test material, instructions, policy, doctrine, and procedures necessary to conduct training. These packages are prepared by AETC, approved by National Security Agency (NSA), and administered by qualified communications security (COMSEC) maintenance personnel.

**Specialty Training Standard (STS).** An Air Force publication that describes an Air Force specialty in terms of tasks and knowledge that an airman in that specialty may be expected to perform or to know on the job. Also identifies the training provided to achieve a 3-, 5-, or 7-skill level within an enlisted AFS. It further serves as a contract between AETC and the functional user to show which of the overall training requirements for an Air Force Specialty Code (AFSC) are taught in formal schools and correspondence courses.

**Standard.** An exact value, a physical entity, or an abstract concept established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. It is a fixed quantity or quality.

**Task Module (TM).** A group of tasks performed together within an AFSC that requires common knowledge, skills, and abilities. TMs are identified by an identification code and a statement.

**Total Force.** All collective components (active, reserve, guard, and civilian elements) of the United States Air Force.

**Training Capability.** The capability of a training setting to provide training on specified requirements, based on the availability of resources.

**Training Planning Team (TPT).** Comprised of the same personnel as a U&TW, TPTs are more intimately involved in training development and the range of issues examined is greater than in the U&TW forum.

**Training Requirements Analysis (TRA).** A detailed analysis of tasks for a particular AFSC to be included in the training decision process.

**Training Setting.** The type of forum in which training is provided (formal resident school, on-the-job, field training, mobile training team, self-study, etc.).

**Upgrade Training.** Mandatory training which leads to the award of a higher skill level.

**Utilization and Training Pattern.** A depiction of the training provided to and the jobs performed by personnel throughout their tenure within a career field or AFS. There are two types of patterns: 1) Current pattern, which is based on the training provided to incumbents and the jobs to which they have been and are assigned; and 2) Alternate pattern, which considers proposed changes in manpower, personnel, and training policies.

**Utilization and Training Workshop (U&TW).** A forum of the AFCFM, MAJCOM functional managers, subject matter experts (SME) and AETC training personnel that determines career ladder training requirements.

**Wartime Training Requirements.** Those task that must be taught when courses are accelerated in a wartime environment. They are identified by an “\*” in CFETP Part II, Section A, STS. In response to a wartime scenario, these task will be taught in the 3- level course in a streamlined training environment. These task are only for those career fields that still need them applied to their schoolhouse tasks.



## **Section A - General Information**

**1. Purpose of the CFETP.** This CFETP provides the information necessary for career field managers, training management, supervisors, and trainers to plan, develop, manage, and conduct an effective and efficient career field training program. The plan outlines the training that individuals should receive in order to develop and progress throughout their careers. For purposes of this plan, training is divided into three areas: initial skills, upgrade, and continuation training. Initial skills training is the AFS specific training an individual receives upon entry in the Air Force, normally conducted by AETC at one of the technical training centers. Upgrade training identifies the mandatory courses, task qualification requirements, and Career Development Course (CDC) completion required for award of the 5-, 7-, or 9-skill level. Continuation training is additional training provided to 3-, 5-, 7-, and 9-level personnel to increase their skills and knowledge beyond the minimum required for upgrade. The CFETP has several purposes, some of which are:

- 1.1. Serves as a management tool to plan, develop, manage, and conduct a career field training program. Also, ensures that established training is provided at the appropriate point in an individual's career.
- 1.2. Identifies task and knowledge training requirements for each skill level in the specialty and recommends training throughout each phase of an individual's career.
- 1.3. Lists training courses available in the specialty, identifies sources of the training, and provides the training medium.
- 1.4. Identifies major resource constraints that impact implementation of the desired career field training program.

**2. Use of the CFETP.** The CFETP is maintained by the Air Force Career Field Manager (AFCFM). MAJCOM Functional Managers and AETC review the plan annually to ensure currency and accuracy and forward recommended changes to the AFCFM. Using the list of courses in Part II, they determine whether duplicate training exists and take steps to eliminate/prevent duplicate efforts. Career field training managers at all levels use the plan to ensure a comprehensive and cohesive training program is available for each individual in the career ladder.

- 2.1. AETC training personnel develop/revise formal resident and exportable training based upon requirements established by the users and documented in the STS. They also develop procurement and acquisition strategies for obtaining resources needed to provide the identified training.
- 2.2. MAJCOM Functional Managers ensure their training programs complement the CFETP mandatory initial skill and upgrade requirements. They also identify the needed AFJQSs/AFQTPs to document unique upgrade and continuation training requirements. Requirements are satisfied through OJT, resident training, or exportable courseware/courses. MAJCOM developed training to support this AFSC must be identified for inclusion into this plan. Forward recommendations concerning this CFETP to your MAJCOM Functional Manager.
- 2.3. 81 TRSS Qualification Training Flight (Q-Flight) personnel develop AFJQSs/AFQTPs based on requests submitted by the MAJCOMs and according to the priorities assigned by the Communications-Electronics (C-E) Maintenance Training Advisory Group (MATAG) Working Group.
- 2.4. Unit level training managers and supervisors manage and control progression through the career field by ensuring individuals complete the mandatory training requirements for upgrade specified in this plan and supplemented by their MAJCOM. The list of courses in Part II is used as a reference for planning continuation or career enhancement training.

**3. Coordination and Approval of the CFETP.** The AFCFM is the approval authority. MAJCOM representatives and AETC training personnel coordinate on the career field training requirements.

## **Section B - Career Field Progression and Information**

4. **Specialty Description.** This information supplements that presented in the Enlisted Classification Directory.

([http://ask.afpc.randolph.af.mil/main\\_content.asp?prods1=1&prods2=14&prods3=591&prods4=1786&prods5=1795](http://ask.afpc.randolph.af.mil/main_content.asp?prods1=1&prods2=14&prods3=591&prods4=1786&prods5=1795))

### **4.1. Network Infrastructure Systems Apprentice/Journeyman.**

4.1.1. **Specialty Summary.** Deploys, sustains, troubleshoots and repairs voice, data and video network infrastructure and cryptographic equipment in a fixed and deployed environment. Sustains and operates systems through effective troubleshooting, repair, diagnostics and system performance analysis. Related DoD Occupational Subgroups: 115000.

#### **4.1.2. Duties and Responsibilities:**

4.1.2.1. Plans, organizes and directs sustainment activities. Establishes work standards, methods and controls for preventative, scheduled, and unscheduled maintenance actions. Determines extent and economy of repair of malfunctioning equipment. Ensures compliance with technical data, instructions, and work standards. Interprets malfunctions and prescribes corrective action. Serves on, or directs inspection teams organized to evaluate base or command sustainment programs. Manages or performs research and development projects for assigned systems.

4.1.2.2. Reviews technical instructions, plans, and installation drawings to install systems. Ensures conformance to standard installation practices. Plans and schedules communications and related equipment installations. Resolves installation and maintenance discrepancies using applicable directives, diagrams and installation systems records. Inventories project and work order materials. Initiates and conducts system verification tests to assess the capability and effectiveness of networks and communications systems.

4.1.2.3. Maintains, inspects and tests assigned systems. Coordinates with commercial service providers and depots to conduct tests of system components and assemblies to isolate faults. Removes, repairs, replaces and restores systems or subsystems.

4.1.2.4. Performs organizational, intermediate and depot level sustainment on assigned systems. Establishes priorities and schedules repair actions. Isolates malfunctions using troubleshooting techniques, diagnostic software, technical data, block diagrams, voltage and waveform measurements, and other tests requiring specialized test equipment. Repairs computer network systems and associated peripheral equipment. Test components using bench mockups and related test equipment. Aligns and modifies system components according to National Security Agency, Joint, Departmental, DISA Directives, technical data, Time Compliance Technical Orders (TCTO) and local procedures. Evaluates and recommends methods to improve system or equipment performance and sustainment procedures.

4.1.2.5. Documents inspection and maintenance actions. Establishes and maintains systems configuration records. Monitors and documents systems performance.

4.1.2.6. Ensures compliance with operation security practices. Applies communications security programs to include physical, cryptographic, transmission, and emission security. Develops and ensures compliance with safety standards and instructions.

4.1.2.7. Performs pre-deployment operations and mobilization of theater deployable communications systems for transport by air, land or sea. Deploys systems and support equipment to support mission requirements. Establishes maintenance management procedures and agile logistics support channels to sustain continuous network operations. Coordinates and assists end users in isolating and eliminating communications connectivity problems. Removes, repairs and replaces assemblies, subassemblies and

electronic components to optimally sustain communications networks. Prepare systems for redeployment and equipment regeneration.

#### **4.3. Communications Infrastructure Systems Superintendent.**

**4.3.1. Specialty Summary.** Manages and directs communications infrastructure maintenance, facilities and resources. Included are functions of installing, maintaining, repairing, overhauling, deploying, and modifying network infrastructure, cryptographic equipment, voice and data switching systems, telecommunications cable, and antenna activities supporting command, control, communications, and computer systems. Related DoD Occupational Subgroups: 115000.

##### **4.3.2. Duties and Responsibilities:**

4.3.2.1. Directs maintenance activities. Oversees pre-deployment operations and mobilization of communications systems for transport by air, land or sea. Deploys systems and support equipment to fulfill mission requirements. Establishes maintenance management procedures and logistics support channels to sustain Command, Control, Communications, Computer, Intelligence Surveillance, Reconnaissance (C4ISR) operations. Coordinates and assists end users in isolating and eliminating communications connectivity problems. Prepare systems for redeployment and equipment regeneration.

4.3.2.2. Inspects and evaluates maintenance activities. Interprets findings, and recommends or initiates corrective action. Serves on or directs inspection teams to evaluate maintenance activities. Discusses inspection findings. Maintains liaison with users to ensure adequate services are being provided.

4.3.2.3. Manages organizational, intermediate and depot level maintenance on assigned systems. Establishes priorities and schedules repair actions. Supervises the repair of network hardware, cryptographic equipment and backbone infrastructure cable and antenna systems. Manages systems maintenance and modifications according to National Security Agency, Joint, Departmental, DISA Directives, technical data, Time Compliance Technical Orders (TCTO) and local procedures. Resolves problems with installing, maintaining, repairing, and overhauling systems and equipment. Establishes local maintenance procedures and policies. Performs research and development of new systems and equipment.

4.3.2.4. Ensures compliance with operation security practices. Applies communications security programs to include physical, cryptographic, transmission, and emission security. Develops and ensures compliance with safety standards and instructions

**4.4. Communications-Electronics Chief Enlisted Manager.** This specialty "caps" at the Chief Master Sergeant Level with those specialties that came up through the 2E0XX, 2E1XX, 2E2XX, and 2E6XX career ladders. Personnel attaining the rank of Chief are assigned broad ranging duties in directing and managing diverse functions such as activities that install, remove, relocate, repair, and maintain radar systems (air traffic control and aircraft control and warning), telephone systems, satellite, wideband and telemetry systems, ground radio systems, airfield systems, visual, imagery and intrusion detection systems, computer, network, switching and cryptographic, and antenna and cable systems. Other challenges that these Chiefs face are assignments to the White House Communications Agency, Air Force Element at CENTCOM, the Air Force Communications Agency, Defense Information Systems Agency, NATO, etc.

4.5. The following are some of the more common missions you may encounter as a 2E2X1.

Command, Control, Communications, Computers,  
Intelligence, Surveillance and Reconnaissance Systems



[AWACS](#)

Predator  
Ground Control Station  
(GCS)



Air Operations Center  
Infrastructure



[TSC-147 JTIDS](#)



[AN/TYQ-23 Modular Control Equipment](#)

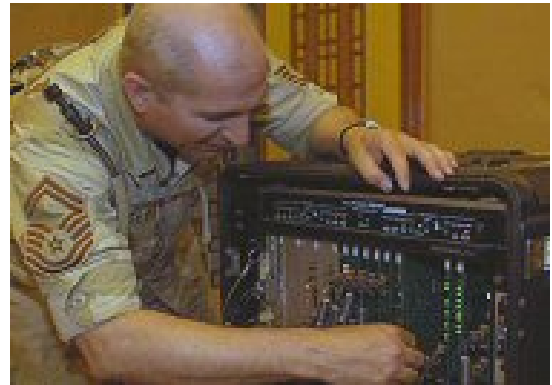


## Network Infrastructure

(In-garrison & Deployable)



NCC\NOSC



Theater Deployed Communications (TDC)

## Air Force Mission Systems

Air Force Mission Support System (AFMSS)



Global Broadcast System

## Cryptographic Systems



KIV-7



KG-194



KIV-19



KG-84



## Strategic Command and Control

### STRATEGIC AUTOMATED COMMAND CONTROL SYSTEM (SACCS)



6210 Rack



Electrical Surge Arresters (ESA)

**5. Skill/Career Progression.** Adequate training and timely progression from the apprentice to superintendent skill levels play an important role in the Air Force's ability to accomplish its mission. It is essential that everyone involved in training do their part to plan, manage, and conduct an effective training program. The guidance provided in this part of the CFETP and the [2E2X1 Education and Training Path](#) table will ensure individuals receive viable training at appropriate points in their careers.

Apprentice (3-Level) Training
Upon completion of initial skills training a trainee will work with a trainer to enhance their knowledge and skills.
Utilize CDCs, AFJQSS/AFQTPs, and other exportable courses to progress in the field.
Once task certified, a trainee may perform the task unsupervised.
Journeyman (5-Level) Training
Enter into continuation training to broaden experience base.
Five-levels may be assigned job positions such as team leader and shift supervisor.
Attend the Airman Leadership School (ALS) after serving 48 months in the Air Force or selection to rank of SSgt (active duty only). In-residence or correspondence course is required for Air National Guard/Air Force Reserve Command (ANG/AFRC) personnel.
Use CDCs and other references identified by the AFCFM to prepare for Weighted Airman Performance Systems (WAPS) testing.
Pursue a Community College of the Air Force (CCAF) degree.
Craftsman (7-Level) Training
A seven-level can expect to fill various supervisory and management positions such as shift leader, team chief, supervisor, or task certifier.
Seven-levels should take courses or obtain added knowledge on management of resources and personnel and attend the 7-level resident course.
Continue academic education through CCAF or other higher degree programs.
Attend the Noncommissioned Officer Academy (NCOA). In-residence or correspondence course is required for ANG/AFRC personnel.
Superintendent (9-Level) Training
A nine-level can be expected to fill positions such as superintendents and various staff positions.
Pursue increased knowledge for budget, manpower, resources, and personnel management.
Pursue additional education and completion of courses outside of their AFS.
Chief Enlisted Manager (CEM) Training
Must be selected for CMSgt and possess qualifications in a feeder specialty (2E190 or 2E290).
CEMs work in a variety of similar jobs and functional areas where general managerial and supervisory abilities can be most effectively used and challenged.
Resident graduation of the USAF Senior NCO Academy (SNCOA) is a prerequisite for CMSgt sew-on (active duty only). In-residence or correspondence course required for ANG/AFRC personnel.
Resident graduation of the Chief Master Sergeant Leadership Course (CLC).

**6. Training Decisions.** This CFETP was developed to encapsulate an entire spectrum of training requirements for the Network Infrastructure Systems career field, using a building block approach (simple to complex). Included in this spectrum was the strategy of when, where, and how to meet the training requirements. The strategy must be apparent and affordable to reduce duplication of training and eliminate a disjointed approach to training. The following decisions were made by members of the 24-28 July 2006 Utilization and Training Workshop.

6.1. Initial Skills. The workgroup reviewed the 3-level course. The schoolhouse introduced and recommended changes, as did the AFCFM and Subject Matter Experts. It was unanimously agreed by the workgroup the course is already on a great path and only minor enhancements were made to the 3-level STS. The biggest change was combining like items to provide more flexibility to the schoolhouse during course instruction.

6.1.1. An update of the wartime 3-level STS was conducted by the forum. As per the previous publication, task annotated by “\*” in attachment 2 are those selected as wartime training requirement. These tasks implemented by a wartime schedule are to be trained by the schoolhouse when directed by higher headquarters. The wartime STS is implemented to expedite the number of 3-levels going through tech schools in the possibility we have to surge manning and recruiting. During normal peacetime operations the full STS will be instructed.

6.2. Five-Level Upgrade Requirements. The 5-Level Course Training Guide (CTG) underwent minor changes to reflect current duties being performed in the field.

6.2.1. CDC. CDC development will continue to be restricted to six volumes, although all 2E six volume CDC courses will be separated into two 3-volume courses. The first course (2EX5X) will contain the three core volumes. The second course will contain the three respective AFSC-specific volumes. The following table outlines 5-level CDC contents.

<b>2EX5X</b>	
VOLUME 1	Maintenance Management
VOLUME 2	Theories, Techniques, and Test Equipment
VOLUME 3	Maintenance Mission
<b>2E251</b>	
VOLUME 1	Support to the Communications Mission
VOLUME 2	Communications & IT Concepts
VOLUME 3	Security and Information Protection Concepts

6.3. Seven-Level Upgrade Requirements. No 7-level CDCs are required for this AFSC. The 7-level CTG underwent minor updates to standardize training in core competencies of deployment concepts, system planning and implementation, and management principles.

6.4. Proficiency Training. This training is job qualification for an assigned duty position. Additional qualification training becomes necessary when personnel transfer to another duty position, the unit mission changes, a new personnel program comes on board, or any time changes in techniques or procedures occur.

6.5. Continuation Training: The purpose of the continuation training program is to provide additional advanced training, exceeding the minimum upgrade training requirements, with the emphasis on present and future duty positions. MAJCOMs may develop a continuation training program to ensure individuals in the career field receive the necessary training at the appropriate points in their careers. The training program will identify both mandatory and optional training requirements.

6.6. Commercial Certifications. Table 1-1 contains some available commercial certifications for 2E2X1 technicians. An “X” in the DANTES column indicates that testing may be completed at the base education office. Tuition Assistance (TA) pays for only one certification during an entire career. See the local base education office for more information. The Department of Veterans Affairs (VA) has licensing and certification benefits that can be used, including the Montgomery GI Bill. Visit <http://www.gibill.va.gov/pamphlets/lcweb.htm> for more information.

<b>Certifications</b>	<b>Criteria</b>	<b>Website</b>	<b>DANTES</b>
<b><u>Electronics Technician Association (ETA)</u></b> <ul style="list-style-type: none"> <li>• Associate CET</li> <li>• Journeyman CET Competencies <ul style="list-style-type: none"> <li>◦ Certified Network Computer Technician</li> <li>◦ Certified Network System Technician</li> </ul> </li> <li>• Computer Competencies <ul style="list-style-type: none"> <li>◦ Computer Service Technician</li> <li>◦ Certified Network Computer Technician*</li> <li>◦ Certified Network System Technician**</li> <li>◦ Web Specialist</li> <li>◦ Electronics-Commerce Developer</li> </ul> </li> <li>• Senior (CET)</li> <li>• Master (CET)</li> </ul>	<ul style="list-style-type: none"> <li>• Experience</li> <li>• Written Exam</li> </ul>	<a href="http://www.eta-i.org/">http://www.eta-i.org/</a>	X
<b><u>National Association of Radio and Telecommunications Engineers (NARTE)</u></b> <ul style="list-style-type: none"> <li>• Junior Telecommunications Tech</li> <li>• Senior Telecommunications Tech</li> <li>• Master Telecommunications Tech</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Experience</li> <li>• References</li> <li>• Written Exam</li> </ul>	<a href="http://www.narte.org">http://www.narte.org</a>	X
<b><u>Cisco Certifications</u></b> <ul style="list-style-type: none"> <li>• CCNA (Voice) Associate</li> <li>• CCIE (Voice) Expert</li> <li>• CCVP (Voice) Professional</li> <li>• CCNP Professional</li> <li>• CCSP Professional</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Experience</li> <li>• Written Exam</li> </ul>	<a href="http://www.cisco.com">http://www.cisco.com</a>	
<b><u>Nortel Certifications</u></b> <ul style="list-style-type: none"> <li>• (NCDE) Nortel Certified Design Expert</li> <li>• (NCSE) Nortel Certified Support Expert</li> <li>• (NCDS) Nortel Certified Design Specialist(NCSS) Nortel Certified Support Specialist</li> <li>• (NCTS) Nortel Certified Technology Specialist</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Experience</li> <li>• Written Exam</li> </ul>	<a href="http://nortelnetworks.com/">http://nortelnetworks.com/</a>	
<b><u>Advance Computer Applications</u></b> <ul style="list-style-type: none"> <li>• CompTIA A+ Certification</li> <li>• CompTIA Security+ Certification</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Written Exam</li> </ul>	<a href="http://certification.comptia.org">http://certification.comptia.org</a>	X
<b><u>Siemens Certifications</u></b> <ul style="list-style-type: none"> <li>• SCCP - Siemens Certified Communication Professional</li> <li>• SCCS - Siemens Certified Communication Specialist</li> <li>• SCCA - Siemens Certified Communication Associate</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Experience</li> <li>• Written Exam</li> </ul>	<a href="http://www.siemens.com">http://www.siemens.com</a>	

\*You can roll over an A+ certification to an ETA Computer Service Technician certification.

\*\*You can roll over a Net+ certification to an ETA Certified Network Computer Technician certification.

**Table 1-1**

**7. Community College of the Air Force (CCAF) Academic Programs.** Enrollment in CCAF occurs upon completion of basic military training. CCAF provides the opportunity for all enlisted members to obtain an Associate in Applied Science degree. In order to be awarded the CCAF degree, all academic requirements must be completed before the student separates from the Air Force, retires, or is commissioned as an officer. In addition to the associate degree program, CCAF offers the following:

7.1. Occupational Instructor Certification. The College offers the Occupational Instructor Certification to instructors teaching full time in a CCAF affiliated school. To qualify, instructors must complete a 3 semester hour Instructor Methodology course, a 12 semester hour Teaching Internship, have two years teaching experience from date of Teaching Internship completion, hold an associate or higher degree, and be recommended by their commander/commandant.

7.2. The Electronic Systems Technology (4VHP) program applies to 2EXXX career fields.

7.2.1. Degree Requirements: Individuals must hold the 5-skill level at the time of program completion.

	Semester hours
Technical Education.....	24
Leadership, Management, and Military Studies.....	6
Physical Education.....	4
General Education .....	15
Program Electives.....	15
Total	64

7.2.2. Technical Education (24 semester hours): A minimum of 12 semester hours of Technical Core subjects and courses must be applied and the remaining semester hours will be applied from Technical Core/Technical Elective subjects and courses.

7.2.3. Leadership, Management, and Military Studies (6 semester hours): Professional military education and/or civilian management courses. See CCAF General Catalog for application of civilian management courses.

7.2.4. Physical Education (4 semester hours): Satisfied upon completion of basic military training.

7.2.5. General Education (15 semester hours): Courses must meet the criteria for application of courses to the General Education requirement and be in agreement with the definitions of applicable General Education subjects/courses as outlined in the CCAF General Catalog.

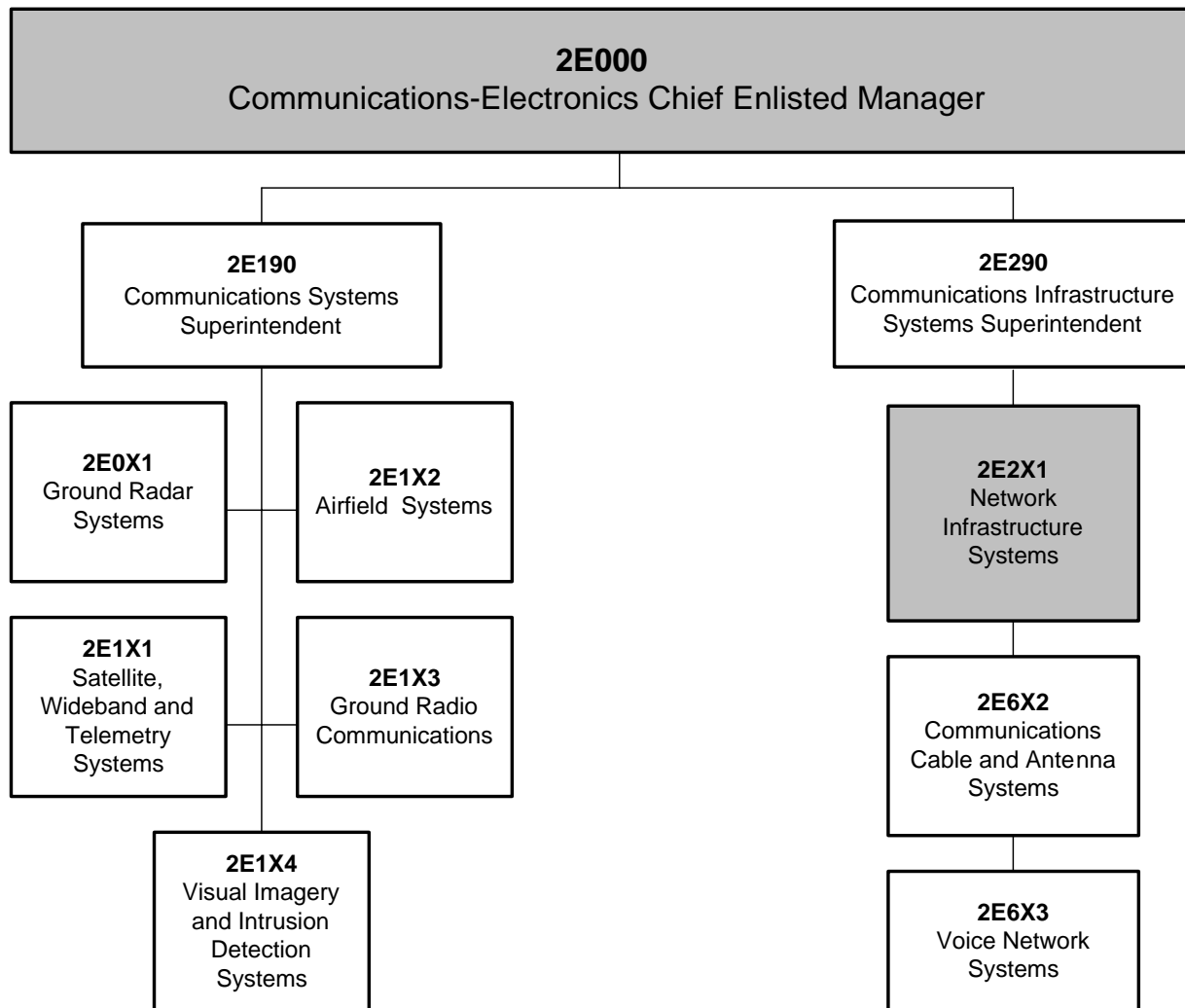
7.2.6. Program Elective (15 semester hours): Satisfied with applicable Technical Education; Leadership, Management, and Military Studies; or General Education courses, including natural science courses meeting General Education requirement application criteria. Six semester hours of CCAF degree applicable technical credit otherwise not applicable to this program may be applied.

7.3. See the current CCAF General Catalog for details regarding the Associates of Applied Science in Electronic Systems Technology. The catalog is available at your education office or from <http://www.au.af.mil/au/ccaf/>.

7.4. Additional off-duty education is highly encouraged. Individuals desiring to become an AETC instructor should be actively pursuing an associate degree. A degreed faculty is necessary to maintain CCAF's accreditation through the Southern Association of Colleges and Schools.

8. **Career Field Path.** The following summarizes career progression and personnel allocations across the career ladder. 2E0X1, 2E1XX, 2E2X1, and 2E6XX personnel maintain their individual AFSC identifiers through the rank of MSgt. Upon promotion to SMSgt, AFSC 2E0X1, 2E1X1, 2E1X2, 2E1X3, and 2E1X4 merge to become a 2E190. Likewise the 2E2X1, 2E6X2, and 2E6X3 merge to become the 2E290. At Chief Enlisted Manager, the 2E190 merges with 2E290 specialty to become a 2E000. Specific demographic information is available on the Web at <http://www.afpc.randolph.af.mil/demographics>

## 2EXXX Career Field Progression



<b>2E2X1 NETWORK INFRASTRUCTURE SYSTEMS</b> <b>EDUCATION AND TRAINING PATH</b>	
EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
BASIC MILITARY TRAINING SCHOOL	
APPRENTICE TECHNICAL SCHOOL (3-SKILL LEVEL)	Airman..... 6 months
UPGRADE TO JOURNEYMAN (5-SKILL LEVEL) Minimum 15 months OJT training (9 months for retrainees). Completion of all 2E251 CTG core tasks and 5-Level CDCs..... Mandatory  Specific AFJQsS/AFQTPs for equipment at assigned location. .... Mandatory  Maintenance Management and Generic AFJQsS/AFQTPs for various unit level duties..... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFETS/CFS/SMT training as determined by MAJCOM ..... Optional	A1C ..... 10 months   SrA ..... 3 years Earliest ..... 28 Months HYT ..... 12 years
AIRMAN LEADERSHIP SCHOOL (ALS) Attendance is limited to SSgt selectees or those attaining 48 months Total Active Federal Military Service (TAFMS) and who have not been selected for promotion to SSgt. Completion is mandatory before assuming the rank of SSgt. ANG/AFRC may complete by correspondence course..... Mandatory	TRAINER: Must meet trainer eligibility requirements set IAW <a href="#">AFI 36-2201 Vol 3, chapter 6</a>
UPGRADE TO CRAFTSMAN (7-SKILL LEVEL) Minimum rank of SSgt. 12 months OJT training (6 months for retrainees). Completion of all 2E271 CTG core tasks and AFQTP 2EXXX-201L, Communications-Electronics Work Center Manager's Handbook. Attendance at formal 7-level school. Must be 7-level to sew on TSgt..... Mandatory  Maintenance Management and Generic AFJQsS/AFQTPs for various unit level duties..... Mandatory  AETC Supplemental training courses as determined by MAJCOM ..... Optional  AFCA seminars at Scott AFB. Consult your MAJCOM for course quotas..... Optional  CFS/SMT training as determined by MAJCOM ..... Optional	SSgt ..... 7.5 years Earliest ..... 3 years HYT ..... 20 years  TSgt..... 12.5 years Earliest ..... 5 years HYT ..... 24 years  CERTIFIER: Must meet certifier eligibility requirements set IAW <a href="#">AFI 36-2201 Vol 3, chapter 6</a>



<b>2E2X1 NETWORK INFRASTRUCTURE SYSTEMS EDUCATION AND TRAINING PATH</b>	
EDUCATION AND TRAINING REQUIREMENTS	AVERAGE SEW ON TIME AND COMMENTS
<b>NONCOMMISSIONED OFFICER ACADEMY (NCOA).</b> Completion of course is mandatory before assuming the rank of MSgt. .....Mandatory  Active duty attendance is limited to TSgt and TSgt selectees.  ANG/AFRC SSgt or TSgt may attend in-residence or complete by correspondence course.	MSgt..... 16 years Earliest ..... 8 years HYT ..... 26 years
<b>USAF SENIOR NONCOMMISSIONED OFFICER ACADEMY (SNCOA)</b> Attendance is limited to SMSgt, SMSgt selectees, and selected MSgts. Completion is mandatory before assuming the rank of CMSgt. .....Mandatory  SNCOA Correspondence Course .....Optional  ANG/AFRC may complete by correspondence course. ANG/AFRC MSgts may attend in-residence.....Mandatory	SMSgt ..... 19.2 years Earliest ..... 11 years HYT ..... 28 years
<b>UPGRADE TO SUPERINTENDENT (9-SKILL LEVEL)</b>  Minimum rank of SMSgt.  Complete AFQTP 2EXXX-201LB, Communications-Electronics Manager's Handbook. ....Mandatory  Maintenance Management and Generic AFJQs/AFQTPs for various unit level duties. ....Mandatory	CMSgt ..... 21.5 years Earliest ..... 14 years HYT ..... 30 years
<b>Chief Master Sergeant Leadership Course (CLC)</b> Attendance is limited to Chief Master Sergeants and Chief Master Sergeant selects. .....Mandatory	CMSgt ..... 21.5 years Earliest ..... 14 years HYT ..... 30 years

NOTE 1: Published sew on times are Air Force averages. Refer to the Air Force Personnel Center's homepage to determine career field specific information:

<http://ask.afpc.randolph.af.mil/EProm/default.asp?prods3=5&prods2=2&prods1=1>

NOTE 2: See Part II, Section D for a list of AFJQs/AFQTPs, AETC supplemental, and CFS/SMT training.

NOTE 3: All core/duty position tasks must be completed prior to upgrade.

## Section C - Skill Level Training Requirements

**9. Purpose.** The various skill levels in the career field are defined in terms of tasks and knowledge requirements for each skill level in the Network Infrastructure Systems career field of the Communications-Electronics Systems career ladder. They are stated in broad, general terms and establish the standards of performance. An all encompassing core task list has not been developed for this specialty because of the diversity of the missions supported and the equipment installed to meet mission requirements. Core tasks, knowledge items, and skill requirements for this specialty are identified in the STS, CDCs, AFJQSS/AFQTPs, etc. Completion of the mandatory 3-level skill awarding course, CDCs, 7-level course, and applicable AFJQSS/AFQTPs define the Air Force core tasks for this specialty.

### 10. Specialty Qualification Requirements.

#### 10.1. Apprentice (3-Level) Training.

KNOWLEDGE	Fundamentals of electronics; digital theory; fundamentals of computer and network; protocols; cryptographic techniques and equipment configuration; and communication and switching systems principles of operation and technologies  Basic troubleshooting procedures, operation and use of test equipment; computer programming techniques; use of technical data, wiring diagrams, and schematic drawings  Structure and use of Air Force supply system
EDUCATION	Completion of high school with courses in computers and mathematics is desirable.
TRAINING	Electronics Principles, course E3ABR2E231 01ZA (PDS Code XQR) (See Attachment 1 of the STS for course training standard)  Network Infrastructure Systems, course E3ABR2E231 01ZC (PDS Code O25) (See Attachment 2 of the STS for course training standard)
EXPERIENCE	None required.
OTHER	Normal color vision is required for entry into this AFSC as defined by AFI 48-123, <i>Medical Examination and Standards</i> .  Qualification to operate government vehicles according to AFI 24-301, <i>Vehicle Operations</i> .  Specialty requires routine access to Top Secret material or similar environment. For award and retention of AFSCs 2E2X1, completion of a current Single Scope Background Investigation (SSBI) according to AFI 31-501, <i>Personnel Security Program Management</i> .  <i>NOTE: For award and retention the above is mandatory. Award of the 3-skill level without a completed SSBI is authorized provided an interim SSBI has been granted according to AFI 31-501.</i>
IMPLEMENTATION	Entry into training is accomplished by reserving a position in the career field upon entry into the Air Force.

#### 10.2. Journeyman (5-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	<p>Course J4AMP2E2X1 A22A (Data Processor Display Systems Maintenance) at Tinker AFB, OK. (Mandatory upgrade requirement for personnel assigned to AWACS systems.)</p> <p>Mandatory completion of training according to AFI 21-109, <i>Communications Security, Equipment Maintenance and Maintenance Training</i> for those sustaining cryptographic equipment</p>
EXPERIENCE	<p>Qualification and possession of AFSC 2E231</p> <p>Experience in functions such as installing, troubleshooting, repairing, operating, testing, or modifying assigned systems, network, missile control, cryptographic and tactical switching systems</p> <p>Completion of the 2E251 Career Development Course</p> <p>Completion of all 2E251 CTG core tasks (See Attachment 3 of the STS for career training guide)</p> <p>Completion of applicable equipment AFJQSS/AFQTPs</p> <p>Completion of all local tasks assigned for the duty position</p>
OTHER	<p>Specialty requires routine access to Top Secret material or similar environment. For award and retention of AFSCs 2E2X1, completion of a current Single Scope Background Investigation (SSBI) according to AFI 31-501, <i>Personnel Security Program Management</i>.</p> <p><i>NOTE: For award and retention the above is mandatory. Award of the 3-skill level without a completed SSBI is authorized provided an interim SSBI has been granted according to AFI 31-501.</i></p>
IMPLEMENTATION	<p>Entry into formal upgrade is initiated upon assignment to the individual's first duty station. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.</p>

### 10.3. Craftsman (7-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	<p>Communications-Electronics Career Advancement Course (In-residence), E3ACR2EX7X 01AA (PDS K00)</p> <p>Mandatory completion of training according to AFI 21-109, <i>Communications Security, Equipment Maintenance and Maintenance Training</i> for those sustaining cryptographic equipment</p>
EXPERIENCE	<p>Qualification and possession of AFSC 2E251</p> <p>Experience in performing or supervising functions such as installing, troubleshooting, repairing, operating, testing, or modifying assigned systems</p> <p>Completion of all 2E271 CTG core tasks (See Attachment 4 of the STS for career training guide)</p> <p>Completion of AFQTP 2EXXXX-201L, Communications-Electronics Work Center Manager's Handbook</p> <p>Completion of applicable equipment/unit management function AFJQSS/AFQTPs</p>
OTHER	<p>Specialty requires routine access to Top Secret material or similar environment. For award and retention of AFSCs 2E2X1, completion of a current Single Scope Background Investigation (SSBI) according to AFI 31-501, <i>Personnel Security Program Management</i>.</p> <p><i>NOTE: For award and retention the above is mandatory. Award of the 3-skill level without a completed SSBI is authorized provided an interim SSBI has been granted according to AFI 31-501.</i></p>
IMPLEMENTATION	<p>Entry into formal upgrade training is initiated when individuals obtain the necessary rank and skill level. Qualification training is initiated anytime an individual is assigned duties for which they are not qualified. Use CDCs and AFJQSS/AFQTPs concurrently to obtain the necessary qualification for refresher and cross-utilization training.</p>

#### 10.4. Superintendent (9-Level) Training.

KNOWLEDGE	No additional knowledge requirements.
TRAINING	No AETC training requirement.
EXPERIENCE	Qualification and possession of AFSC 2E271  Experience in managing functions such as installing, troubleshooting, repairing, overhauling or modifying assigned systems  AFQTP 2EXXX-201LB, Communications-Electronics Manager's Handbook
OTHER	Specialty requires routine access to Top Secret material or similar environment. For award and retention of AFSCs 2E2X1, completion of a current Single Scope Background Investigation (SSBI) according to AFI 31-501, <i>Personnel Security Program Management</i> .  <i>NOTE: Award of the 3-skill level without a completed SSBI is authorized provided an interim SSBI has been granted according to AFI 31-501.</i>
IMPLEMENTATION	Entry into OJT is initiated when individuals are selected for the rank of SMSgt. Qualification training is initiated anytime individuals are assigned duties for which they are not qualified.

#### 10.5. Training Sources.

10.5.1. Electronic Principles training - 332 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/332trs/ep/index.htm>.

10.5.2. AFSC specific training - 338 TRS, Keesler AFB, MS. at <https://wwwmil.keesler.af.mil/338trs/index.htm>

10.5.3. 2EX7X Communications-Electronics Career Advancement course (7-Level School) – 338 TRS, Keesler AFB, MS at <https://wwwmil.keesler.af.mil/338trs/special/7-level.htm>.

10.5.4. CDC's are available for upgrade purposes through the unit training manager. For individual qualification and cross-utilization training, CDCs are ordered through the unit training office.

10.5.5. AFJQSS/AFQTPs are Air Force publications and are mandatory for use in qualification training. They are developed by the 81 TRSS (Q-Flight), Keesler AFB, MS and may be downloaded from <https://wwwmil.keesler.af.mil/81trss/qflight/index.htm>. Procedures for requesting development of AFJQSS/AFQTPs are contained in AFI 36-2233 *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*. AFJQSS/AFQTPs are listed in Part II, Section D, of this CFETP.

10.5.6. COMSEC QTPs and STPs are Air Force publications created by AETC and are mandatory for personnel who perform initial check-outs, change internal straps, or maintain equipment of portions of systems that contain COMSEC functions. CQTPs can be downloaded and STPs can be ordered via [https://wwwmil.keesler.af.mil/338trs/comp\\_maint.htm](https://wwwmil.keesler.af.mil/338trs/comp_maint.htm). Procedures for requesting or development of CQTPs/STPs are contained in AFI 21-109, *Communications Security (COMSEC) Equipment Maintenance and Maintenance Training*.

10.5.7. Contract Field Service (CFS), and Special Maintenance Team (SMT) training may be requested to provide on-site training. Direct requests for AFETS, CFS, or SMT training to your MAJCOM.

## **Section D - Resource Constraints**

**11. Purpose.** This section identifies known resource constraints that preclude optimal/desired training from being developed or conducted, including information such as part numbers, national stock numbers, number of units required, cost, manpower, etc. Included are narrative explanations of each resource constraint and an impact statement describing what effect each constraint has on training. Finally, this section includes actions required, OPR, and target completion date. Resource constraints will be, at a minimum, reviewed and updated annually.

### **12. Apprentice (3-Level) Training.**

#### **12.1. Constraints:**

12.1.a. (Block 11) Information Systems Operations and sustainment Teaching 3000 Series Virtual Private Network (VPN) concentrators normally used to support Base Communications functions.

12.1.b. (Block 12) Air and Space Expeditionary Force (AEF) Virtual Private Network (VPN) concentrators normally used to support Air Expeditionary Force (AEF) Communications functions.

#### **12.1.1. Impact.**

12.1.1.a (Block 11) Will not be able to populate 1 of the 3 Block 11 lab rooms with VPN concentrator equipment.

12.1.1.b (Block 12) Without the required AEF VPN equipment and software we will not be able to teach 1 day of instruction in the 2E231 course scheduled to start on 23 April 2007.

#### **12.1.2. Resources Required.**

12.1.2.a (Block 11) Require 4 ea 3000 Series VPN Concentrators.

12.1.2.b (Block 12) Resources required are Cisco 1811 12 ea, Microsoft Server Equipment 6 ea, and Microsoft Server software 6 ea.

#### **12.1.3. Action Required.**

12.1.3.a Coordinated the acquisition of the 3000 Series VPN concentrators with USAFE POC's to acquire 4 older equipment items after contract negotiations for replacement of older VPN's are concluded.

12.1.3.b (Block 12) Submitted a Course Resource Estimate, approved by 81 TRG on 18 Oct 06 to the 2E AFCEM for funding. Funding was approved and equipment has been ordered.

#### **12.2. OPR/Target Completion Date.**

12.2.1.a (Block 11) OPR is 338 TRS with a target date of on/around 23 April 07 for receipt of the requested 3000 Series VPN's.

12.2.1.b (Block 12) Target date of on/around 23 April 07 for receipt of the necessary AEF equipment and software support items.

### **13. Journeyman (5-Level) Training.**

#### **13.1. Constraints: None.**

#### **13.1.1. Impact. N/A**

13.1.2. Resources Required. N/A

13.1.3. Action Required. N/A

13.2. OPR/Target Completion Date. N/A

**14. Craftsman (7-Level) Training.**

14.1. Constraints: None.

14.1.1. Impact. N/A

14.1.2. Resources Required. N/A

14.1.3. Action Required. N/A

14.2. OPR/Target Completion Date. N/A

***Section E - Transition Training Guide***

**15.** There are currently no transition training requirements. This area is reserved.

## **PART II**

### ***Section A - Specialty Training Standard***

**1. Implementation.** The implementation of training in support of this STS is with the class beginning 23 April 2007.

**2. Purpose.** As prescribed in AFI 36-2201, vol 5 this STS:

2.1. The Specialty Training Standards (STS) at Attachments 1 and 2:

2.1.1. Establishes the training requirements for airmen to perform 3-skill level duties in the Network Infrastructure Systems career ladder of the Communications-Electronics Systems career field. The training tasks are based on an analysis of duties in the AFECD for AFSC 2E2X1.

2.1.2. Provides the basis for the development of more detailed training materials, training objectives, and training evaluation instruments for the course.

2.1.3. Shows formal training requirements. Attachment 1 lists the Electronic Principles requirements for this specialty and contains the proficiency code key pertaining to this attachment. Students receive this training through AETC course E3AQR2E231 01ZA.

2.1.4. Attachment 2 contains a list of behavioral statements that describe knowledge and job performance requirements the graduate demonstrates on the job as a result of training received in course E3ABR2E231 01ZC as described in the Air Force Education and Training Course Announcements (ETCA) database. Part I, Section D, and the Preface to Attachment 2 explains constraints and/or guidelines to training. When notes or explanations describe constraints in the skill awarding course, they indicate that training on those items is restricted due to the limitation described.

2.2. The Five-Level Career Training Guide (CTG) at Attachment 3:

2.2.1. Provides a complete list of continuation training requirements for the award of AFSC 2E251. Attachment 3 contains the behavioral code key used to indicate the type of training provided by CDCs.

2.2.2. Identifies the mandatory task and knowledge training that is required for the 5-skill level in the Network Infrastructure Systems career field of the Communications-Electronic Systems career ladder. These are based on an analysis of duties and responsibilities as outlined in the AFECD.

2.3. The Seven-Level Career Training Guide (CTG) at Attachment 4:

2.3.1. Provides a complete list of continuation training requirements for the award of AFSC 2E271. Attachment 4 contains the behavioral code key used to indicate the type of training that will be provided.

2.3.2. Identifies the mandatory task and knowledge training that is required for the 7-skill level in the Network Infrastructure Systems ladder of the Communications-Electronics Systems career field. These are based on an analysis of duties and responsibilities as outlined in the AFECD.

2.4. The CTGs at Attachments 3 and 4:

2.4.1. Provide OJT certification columns to record completion of task and knowledge training requirements. Use automated training management systems to document technician qualifications, if available. Task certification must show a start and stop date.

2.4.2. Become a job qualification standard for OJT when placed in AF Form 623, On-the-Job Training Record, and used according to AFI 36-2201, vol 3.

2.4.3. Indicates career knowledge provided in the 5-skill level CDCs. See Air Force Institute for Advanced Distributed Learning (AFIADL) catalog maintained by the unit OJT manager for current CDC listings or go to <http://www.maxwell.af.mil/au/afiadl>.

2.4.4. Are guides for development of promotion tests used in the Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKT) are developed at the USAF Occupational Measurement



Squadron by senior NCOs with extensive practical experience in their career fields. The tests sample knowledge of CTG subject matter areas judged by test development team members to be most appropriate for promotion to higher grades. Questions are based upon study references listed in the WAPS catalog. Individual responsibilities are listed in chapter 1 of AFI 36-2605, *Air Force Military Personnel Testing System*. WAPS is not applicable to the Air National Guard or Air Reserve forces.

**3. Recommendations.** Comments and recommendations are invited concerning the quality of AETC training. A Training Feedback Hotline has been installed for the supervisors' convenience. For a quick response to concerns, call our Training Feedback Hotline at DSN 597-4566, fax us at DSN 597-3790, or e-mail us at, [81trg-tget@keesler.af.mil](mailto:81trg-tget@keesler.af.mil). Reference this STS and identify the specific area of concern (paragraph, training standard element, etc).

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

MICHAEL W. PETERSON, Lieutenant General, USAF  
Chief Warfighting Integration and  
Chief Information Officer

Attachments:

1. Electronic Principles Course Training Standard
2. Specialty Training Standard, 2E231
3. Five-Level Career Training Guide, 2E251
4. Seven-Level Career Training Guide, 2E271

## PREFACE

NOTE 1: Dashed items in this CTS are not part of the original CTS created at the August 1999 Electronic Principles U&TW however, they are the specific objectives taught in the Electronic Principles course designed to meet the CTS requirements.

NOTE 2: Unless otherwise stated, students may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent the student from continuing in a manner that will lead to an unsatisfactory conclusion, safety violation, or damage to equipment.

NOTE 3: All 3 level tasks will be trained if a wartime surge is ordered

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The individual
Task Performance Levels	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. HIGHLY PROFICIENT)
*Task Knowledge Levels	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step-by-step procedures for doing the task. (PROCEDURES)
	c	Can identify why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, isolate, and resolve problems about the task. (COMPLETE THEORY)
**Subject Knowledge Levels	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
EXPLANATIONS		
<p>* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)</p> <p>** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task or for a subject common to several tasks.</p> <p>X This mark is used alone instead of a scale value to show that no proficiency training is provided in the course.</p> <p>- This mark is used alone in course columns to show that training is required, but not given, due to limitations in resources.</p>		

PROFICIENCY  
CODE

**1. ELECTRONIC SUPPORT SUBJECTS.**

- |  |    |
|--|----|
| 1.1. Safety.   | B  |
| – Identify safety precautions pertaining to electronics.   |    |
| 1.2. First Aid.  | A  |
| – Identify first aid procedures for electrical injuries.   |    |
| 1.3. Electrostatic Discharge (ESD) Control.  | B  |
| – Identify electrostatic discharge (ESD) sensitive device control methods.                                     |    |
| 1.4. Electromagnetic Effects (EMP/EMI).  | B  |
| – Identify the techniques used to protect electronic equipment from the effects of electromagnetics (EMP/EMI). |    |
| 1.5. Metric Notation.  |    |
| 1.5.1. Calculate Powers of Ten.  | 2b |
| – Convert decimal numbers to scientific notation and vice versa.   |    |
| – Perform math operations of numbers expressed as scientific notation.   |    |
| 1.5.2. Electrical Prefixes.  | B  |
| – Convert decimal numbers to electrical prefixes and vice versa.   |    |
| – Convert electrical prefix values to other equivalent electrical prefix values.                               |    |

**2. USE TEST EQUIPMENT.**

- |  |    |
|--|----|
| 2.1. Analog Multimeter.  | 2b |
| – Identify procedures for analog multimeter usage.                               |    |
| – Identify the operating principles of the analog multimeter.                    |    |
| – Measure selected electrical values using analog and digital multimeters.       |    |
| 2.2. Digital Multimeter.   | 2b |
| – Identify procedures for digital multimeter usage.                              |    |
| – Identify the operating principles of the digital multimeter.                   |    |
| – Measure selected electrical values using analog and digital multimeters.       |    |
| 2.3. Oscilloscope.   | 2b |
| – Identify oscilloscope operating principles.                                    |    |
| – Identify the procedures for oscilloscope usage.                                |    |
| – Measure selected electrical values using an oscilloscope and signal generator. |    |
| 2.4. Signal Generator.   | 2b |
| – Identify the procedures for signal generator usage.                            |    |
| – Measure selected electrical values using an oscilloscope and signal generator. |    |

PROFICIENCY  
CODE

**3. BASIC CIRCUITS.**

3.1. Direct Current (DC).

3.1.1. Theory.

B

- Identify circuit schematic symbols.
- Identify basic circuit operating principles.
- Identify resistor voltage divider operating principles.
- Identify terms associated with direct current (DC) principles.
- Determine the results of parameter changes on DC resistive circuits.

3.1.2. Calculations.

2b

- Calculate values for a series resistive DC circuit diagram.
- Calculate values for a parallel resistive DC circuit diagram.
- Calculate values for a series-parallel resistive DC circuit diagram.

3.2. Alternating Current (AC).

3.2.1. Theory.

B

- Identify terms associated with AC principles.

3.2.2. Calculations.

2b

- Calculate AC voltage values.
- Calculate AC frequency/time values.

**4. BASIC CIRCUIT COMPONENTS.**

4.1. Resistors.

4.1.1. Theory.

B

- Identify resistor characteristics.

4.1.2. Color Code.

B

- Using resistor color code, determine the ohm/tolerance value of resistors.

4.1.3. Troubleshoot.

2b

- Troubleshoot a series-parallel resistive circuit to a faulty resistor.

4.2. Inductors.

4.2.1. Theory.

B

- Identify characteristics of inductors.
- Identify inductor DC operating principles.
- Identify inductor AC operating principles.

4.2.2. Troubleshoot.

2b

- Troubleshoot a faulty inductor in a circuit.

	PROFICIENCY CODE
4.3. Capacitors.	
4.3.1. Theory. <ul style="list-style-type: none"><li>– Identify characteristics of capacitors.</li><li>– Identify capacitor DC operating principles.</li><li>– Identify capacitor AC operating principles.</li></ul>	B
4.3.2. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a faulty capacitor in circuit.</li></ul>	2b
4.4. Resistive-Capacitive-Inductive (RCL) Circuit Theory.	
4.4.1. Basic. <ul style="list-style-type: none"><li>– Identify RCL circuit operating principles.</li></ul>	A
4.4.2. Resonant. <ul style="list-style-type: none"><li>– Identify resonant RCL circuit operating principles.</li></ul>	A
4.4.3. Frequency Sensitive Filter. <ul style="list-style-type: none"><li>– Identify frequency sensitive filter operating principles.</li></ul>	A
<b>5. ELECTROMAGNETIC DEVICES.</b>	
5.1. Transformers.	
5.1.1. Theory. <ul style="list-style-type: none"><li>– Identify characteristics of transformers.</li><li>– Identify transformer operating principles.</li></ul>	B
5.1.2. Troubleshoot. <ul style="list-style-type: none"><li>– Troubleshoot a faulty transformer.</li></ul>	2b
5.2. Relays and Solenoids.	
5.2.1. Theory. <ul style="list-style-type: none"><li>– Identify relay and solenoid operating principles.</li></ul>	B
5.2.2. Troubleshoot Relays. <ul style="list-style-type: none"><li>– Troubleshoot a faulty relay in a circuit.</li></ul>	2b
5.3. Motor Theory.	
5.3.1. Direct Current. <ul style="list-style-type: none"><li>– Identify DC motor operating principles.</li></ul>	A
5.3.2. Alternating Current. <ul style="list-style-type: none"><li>– Identify AC motor operating principles.</li></ul>	A

PROFICIENCY  
CODE

5.4. Generator Theory.

5.4.1. Direct Current.

- Identify DC generator operating principles.

A

5.4.2. Alternating Current.

- Identify AC generator operating principles.

A

5.5. Synchro/Servo

5.5.1. Theory.

- Identify servo/synchro operating principles.

A

5.5.2. Theoretical Troubleshooting.

- Identify servo/synchro fault isolation procedures.

-

5.6. Transducer Theory.

- Identify transducer operating principles.

B

**6. SOLID STATE DEVICES.**

6.1. Diodes.

6.1.1. Theory.

- Identify solid-state diode operating principles.

B

6.1.2. Troubleshoot.

- Identify diode fault isolation techniques.
- Troubleshoot a diode circuit.

2b

6.2. Bipolar Junction Transistors.

6.2.1. Theory.

- Identify bipolar transistor operating principles.

B

6.2.2. Troubleshoot.

- Troubleshoot a bipolar junction transistor circuit.

2b

6.3. Special Purpose Device Theory.

6.3.1. Zener Diode.

- Identify zener diode operating principles.

B

6.3.2. Light Emitting Diode (LED).

- Identify LED operating principles.

A

6.3.3. Liquid Crystal Display (LCD).

- Identify LCD operating principles.

A

	PROFICIENCY CODE
6.3.4. Integrated Circuits (IC). – Identify integrated circuit (IC) operating principles.	A
6.3.5. Field Effect Transistor (FET). – Identify MOSFET operating principles.	-
6.3.6. Operational Amplifiers. – Identify OP AMP operating principles.	A
<b>7. TRANSISTOR AMPLIFIER CIRCUITS.</b>	
7.1. Theory. – Identify the transistor amplifier configurations. – Identify common base amplifier operating principles. – Identify common emitter amplifier operating principles. – Identify common collector amplifier operating principles.	B
7.2. Stabilization. – Identify transistor amplifier temperature stabilization operating principles.	B
7.3. Coupling. – Identify coupling circuit operating principles.	B
<b>8. POWER SUPPLY CIRCUITS.</b>	
8.1. Theory.	
8.1.1. Rectifiers. – Identify power supply rectifier operating principles.	B
8.1.2. Filters. – Identify power supply filter operating principles.	B
8.1.3. Voltage Regulators. – Identify shunt regulator operating principles. – Identify series electronic voltage regulator (EVR) operating principles.	B
8.2. Troubleshoot. – Identify types of malfunctions in a filtered power supply circuit. – Troubleshoot a filtered power supply circuit to a faulty component. – Troubleshoot a series EVR circuit to a faulty component.	2b

PROFICIENCY  
CODE

**9. WAVE GENERATING CIRCUITS.**

9.1. Theory.

9.1.1. Oscillators.

B

- Identify LC oscillator operating principles.
- Identify crystal oscillator operating principles.
- Identify the characteristics of oscillator circuits.

9.1.2. Multivibrators.

B

- Identify astable multivibrator operating principles.
- Identify bistable multivibrator operating principles.
- Identify monostable multivibrator operating principles.

9.1.3. Waveshaping Circuits.

B

- Identify sawtooth generator operating principles.
- Identify RC integrating/differentiating circuit operating principles.

**10. DIGITAL NUMBERING SYSTEMS.**

10.1. Conversions.

10.1.1. Binary.

B

- Identify principles of binary conversions.

10.1.2. Octal.

-

- Identify principles of octal conversions.

10.1.3. Hexadecimal.

B

- Identify principles of hexadecimal conversions.

10.1.4. Binary Coded Decimal.

B

- Identify principles of binary coded decimal (BCD) conversions.

10.2. Binary Math Operations.

2b

- Determine the results of math operations.

**11. DIGITAL LOGIC CIRCUITS.**

11.1. Theory.

11.1.1. Gates.

B

- Identify principles of logic gate operation.

11.1.2. Flip-Flops.

B

- Identify principles of flip-flop operation.



PROFICIENCY  
CODE

11.1.3. Combination Logic Circuits	-
– Identify operating principles of combinational logic circuits.	
11.1.3.1. Theoretical Troubleshooting	-
– Troubleshoot a combinational logic circuit.	
11.2. Digital-to-Analog (D/A) and Analog-to-Digital (A/D) Converter Theory.	B
– Identify operating principles of a digital-to-analog (D/A) converters.	
– Identify operating principles of analog-to-digital (A/D) converters.	
<b>12. BASIC COMPUTER FUNDAMENTALS.</b>	
12.1. Network Theory.	
12.1.1. Components.	A
– Identify basic network hardware component operating principles.	
12.1.2. Types.	A
– Identify basic network communication system types.	
12.1.3. Topologies.	B
– Identify basic network physical topologies.	
12.1.4. Communications Mediums	B
12.1.5. LAN Architecture	B
– Identify network medium operating principles.	
<b>13. BASIC COMMUNICATIONS THEORY.</b>	
13.1. Antenna.	B
– Identify antenna operating principles.	
13.2. Transmission Lines.	B
– Identify transmission line theory of operation.	
13.2.1. Data Bus.	B
13.3. Waveguides.	B
– Identify waveguide operating principles.	
13.4. Transmitters.	
13.4.1. Amplitude Modulation (AM).	B
– Identify AM transmitter operating principles.	
13.4.2. Frequency Modulation (FM).	B
– Identify FM transmitter operating principles.	

PROFICIENCY  
CODE

13.5. Receivers.

13.5.1. Amplitude Modulation (AM).

- Identify AM receiver operating principles.

B

13.5.1.1. AM Receiver Signals

13.5.1.1. Measure Radio Frequency (RF)

1a

13.5.1.2. Measure Intermediate Frequency (IF)

1a

13.5.1.3. Measure Audio Frequency (AF)

1a

13.5.1.4. Measure Local Oscillator (LO) Output

1a

13.5.2. Frequency Modulation (FM).

- Identify FM receiver operating principles.

B

**14. SOLDER AND DESOLDER.**

14.1. Terminal Connection.

- Solder a wire to a terminal connector.
- Desolder a wire from a terminal connector.

-

14.2. Printed Circuit Board (PCB).

- Solder three components to a PCB.
- Desolder three components from a PCB.

-

14.3. Multipin Connector.

- Solder a tinned wire into a pin for use in a multipin connector.
- Desolder a wire from a pin used in a multipin connector.

-

14.4. Coaxial Connector.

- Solder a coaxial connector center contact to a coaxial cable.
- Desolder a coaxial connector center contact from a coaxial cable.

-

**15. ASSEMBLE SOLDERLESS CONNECTORS.**

15.1. Crimped Connection.

- Splice two wires together using a crimp connector.
- Crimp a terminal lug to a wire.

-

15.2. Coaxial Connector.

- Assemble a solderless coaxial cable connector to a coaxial cable.

-

15.3. Multipin Connector.

- Crimp a wire into a pin for use in a multipin connector.
- Assemble a multipin connector.

-

## PREFACE

NOTE 1: In the event of a network or system failures, courses are authorized to use alternative methods of instruction to fulfill this STS element.

NOTE 2: Unless otherwise stated in the objective, the student may be allowed two assists from the instructor and still successfully achieve the proper level of proficiency. An instructor assist is defined as anytime an instructor must intercede to provide guidance to a student which leads to a satisfactory completion of the objective or to prevent a student from continuing in a manner which will lead to an unsatisfactory conclusion, safety violation, or damage to the equipment. Successful students have performed the task to the satisfaction of the course; however, they may not be capable of meeting the field requirements for speed or accuracy.

NOTE 3: All equipment related objectives are performed by following procedures from technical orders, technical manuals, or student instructional material developed by the training facility. Test equipment used throughout the course includes:

Multimeter	Cable Tester
Breakout Box	Line Tester
Transmission Measurement Test Set (Firebird 6000)	Oscilloscope

NOTE 4: The equipment items identified below are used as training vehicles within the skill awarding course since it incorporates most of the basic principles and procedures found in the remainder of the AFSC's equipment inventory.

Wire Maintenance Trainer	TSEC/KG-84(A)
Computer Systems (with associated peripherals)	TSEC/KG-194
Network Switches	KOI-18
Routers	KYK-13
Channel Service Unit/Data Service Unit (CSU/DSU)	KYX-15
Multiplexer (Promina)	AN/CYZ-10
Asynchronous Transfer Mode (ATM) Switches	STX-34A
KIV-7	HNF-81
KG-175	KIV-19
Virtual Private Network (VPN) Concentrators	Global Broadcast Service (GBS)
Theater Deployable Communications/Integrated Communications Access Package (TDC-ICAP)	

NOTE 5: All objective references are performed as terminal objectives. Knowledge required to perform STS elements is inherent in each objective. This includes, but is not limited to, defining the capabilities, limitations, and theory of operation of the stated item.

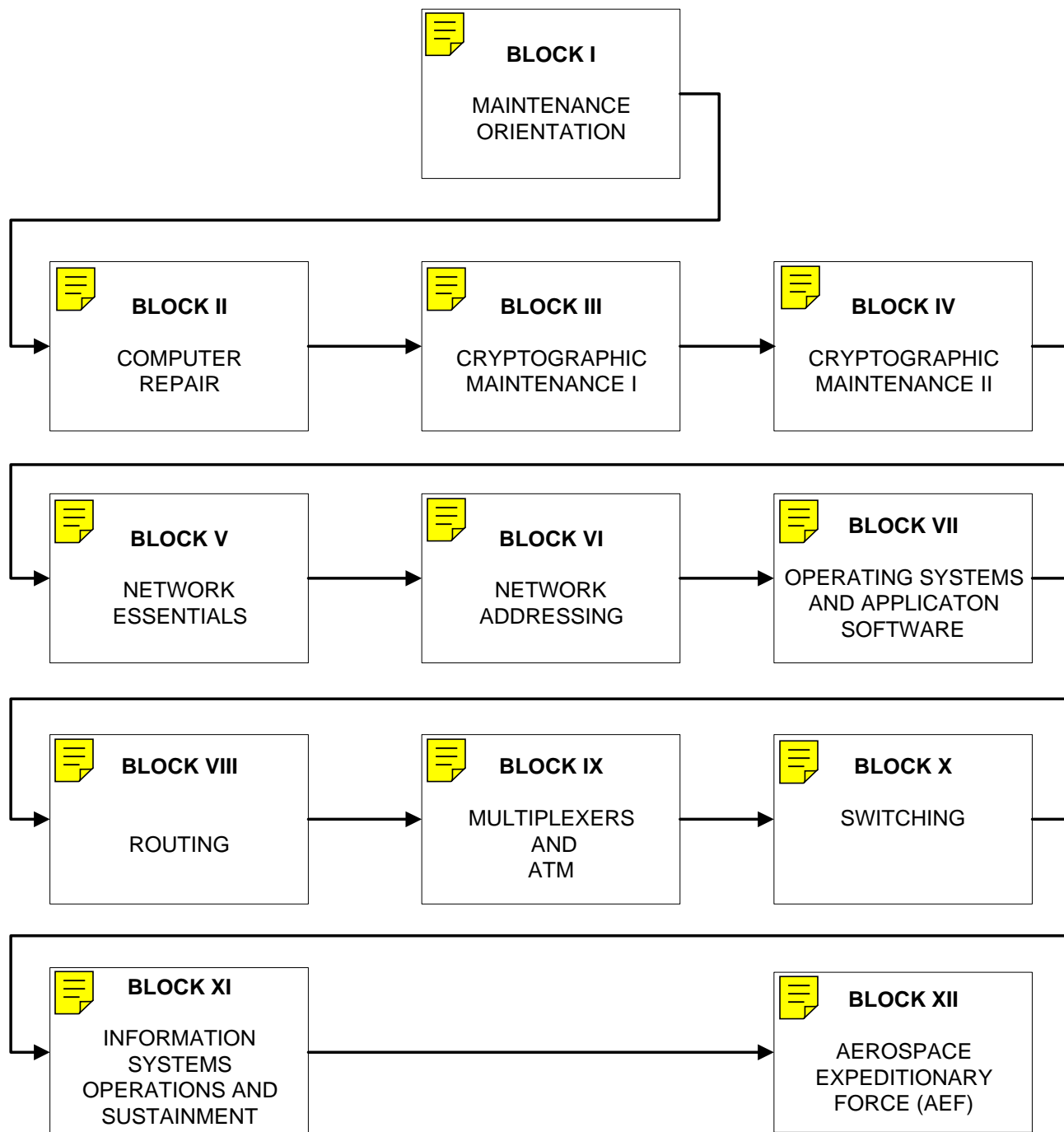
NOTE 6: All task preceded by an “\*\*” are trained during wartime.

NOTE 7: Students completing course E3ABR2E231 01ZC will receive initial COMSEC certification. Those STS items that contribute to this certification are identified in this STS. The applicable STS items were coordinated with the National Security Agency (NSA). The training provided is consistent with course E6AZS2E251 01MA, (STP) COMSEC Awareness Training course

## NETWORK INFRASTRUCTURE SYSTEMS

(E3ABR2E231 01ZC)

The following summarizes the systems and concepts taught in the Network Infrastructure Systems course. This course provides the knowledge and skills necessary for entry into formal upgrade training. To view block information select note icon on the flowchart. This information may vary from the current course content. Contact the course training manager for possible changes.



**1. GENERAL PRINCIPLES.**

- 1.1. Describe the 2E2X1 career field.
- 1.2. Identify major systems.

**2. OPERATIONAL RISK MANAGEMENT (ORM) AND SAFETY.**

- 2.1. Identify the purpose of ORM.
- 2.2. Identify the purpose of AFOSH.
- 2.3. Practice safety precautions during maintenance actions.
- 2.4. Practice safety precautions when working with energized equipment.
- 2.5. Identify common safety hazards of the 2E2X1 career field.

**3. SECURITY.**

- 3.1. Identify security classifications.
- 3.2. Identify general security concerns.

**4. STANDARD MAINTENANCE PRACTICES.**

- 4.1. Identify basic troubleshooting techniques.
- \*4.2. Identify the concepts of grounding.
- \*4.3. Identify the concepts of bonding.
- \*4.4. Identify the concepts of shielding.
- 4.5. Identify the principles of Electro Static Discharge (ESD).
- 4.6. Identify the principles of lightning protection.
- 4.7. Locate elements such as unit, module, row, column, component, pin, connector, or test point using an alphanumeric designator.
- 4.8. Perform a visual inspection of equipment.

**5. TECHNICAL DATA.**

- 5.1. Identify basic facts of technical publications.
- 5.2. Use specific equipment publications when performing maintenance actions.

**6. MAINTENANCE MANAGEMENT.**

- 6.1. Identify the purpose of preventive maintenance inspections.
- 6.2. Identify the purpose of equipment status reporting.
- 6.3. Identify the purpose of documenting maintenance data.
- 6.4. Input maintenance data using an automated maintenance data collection system.
- 6.5. Identify the purpose of logistics support.
- 6.6. Locate parts information.

**7. TEST EQUIPMENT.**

- 7.1. Operate test equipment. (Note 3)

**\*8. AEF CONCEPTS.**

- 8.1. Identify basic concepts of the AEF and UTC deployment process.
- 8.2. Perform the following functions to establish deployed communication services:
  - 8.2.1. Set up network equipment in support of an expeditionary operation.
  - 8.2.2. Configure non-secure network.
  - 8.2.3. Configure secure network.
  - 8.2.4. Sustain network equipment for expeditionary operations.
  - 8.2.5. Tear down network equipment for redeployment.
  - 8.2.6. Configure Global Broadcast System (GBS)

**9. COMMON INSTALLATION PRACTICES.**

- \*9.1. Standard Installation Practices.
  - 9.1.1. State facts related to standard installation practices.
  - 9.1.2. Describe the importance of cable labeling and installation documentation.
  - 9.1.3. Describe wire color coding standards.
  - 9.1.4. Describe fiber optics installation concepts.
  - 9.1.5. Identify procedures to construct a cable using a modular connector.
  - 9.1.6. Identify procedures to construct a cable using a fiber connector.

**10. INFORMATION ASSURANCE.**

- \*10.1. OPSEC.
  - 10.1.1. Define OPSEC.
  - 10.1.2. Identify vulnerabilities.
  - 10.1.3. Describe incident reporting procedures.
- 10.2. COMPUSEC.
  - 10.2.1. Define COMPUSEC.
  - 10.2.2. Identify vulnerabilities.
  - 10.2.3. Describe incident reporting procedures.
- \*10.3. EMISSION SECURITY (EMSEC).
  - 10.3.1. Define EMSEC.
  - 10.3.2. Identify RED/BLACK concepts.
  - 10.3.3. Identify vulnerabilities.
  - 10.3.4. Describe incident reporting procedures.
- \*10.4. COMMUNICATIONS SECURITY (COMSEC). (Note: 7)
  - 10.4.1. Define COMSEC.
  - 10.4.2. Describe procedures used in transmission security.
  - 10.4.3. Describe procedures used in physical security.
  - 10.4.4. Describe procedures used for routine and emergency destruction.

- 10.4.5. Describe procedures used to control access to facilities, equipment, and materials.
- 10.4.6. Describe procedures used to safeguard classified material.
- 10.4.7. Describe procedures used to inventory COMSEC equipment.
- 10.4.8. Describe procedures used to inventory COMSEC materials.
- 10.4.9. Use AFCOMSEC Form 22 to identify special handling requirements of COMSEC material.
- 10.4.10. Identify crypto periods.
- 10.4.11. Identify vulnerabilities and incidents.
- 10.4.12. Describe incident reporting procedures.

**\*11. COMMUNICATIONS PRINCIPLES.**

- 11.1. State facts relating to common signaling methodologies.
- 11.2. State facts relating to common interface standards.
- 11.3. State facts relating to theory and operations of common transmission media.

**\*12. INFORMATION TRANSPORT CONCEPTS.**

- 12.1. State facts relating to the theory and operation of common network topologies.
- 12.2. State facts relating to the theory and operation of common networks.
- 12.3. State facts relating to the theory and operation of VPN.
- 12.4.. State facts relating to the theory and operation of network devices.
- 12.5. State facts relating to the theory and operation of switching techniques.
- 12.6.. State facts relating to the theory and operation of network error detection.
- 12.7.. State facts relating to the theory and operation of network error correction.
- 12.8. State facts relating to the theory and operation of network flow control.
- 12.9. State facts relating to the theory and operation of common multiplexing techniques.
- 12.10. State facts relating to encryption/decryption methods.
- 12.11. State facts relating to common COMSEC devices.
- 12.12. Identify network management concepts and responsibilities.
- 12.13. State facts relating to the theory and operation of data terminal equipment/data communications equipment (DTE/DCE).
- 12.14. State facts relating to the theory and operation of communications protocols/addressing.

**13. MISSION SYSTEMS.**

- 13.1. State facts about Command and Control systems.
- 13.2. State facts about Intelligence, Surveillance, and Reconnaissance (ISR) systems.
- 13.3. State facts about Network Infrastructure systems.

**\*14. INFORMATION SYSTEMS SUSTAINMENT (Computers).**

- 14.1. Hardware Principles.
  - 14.1.1. Perform operational check on a computer system.
  - 14.1.2. Isolate a malfunctioning LRU in a computer system.

- 14.1.3. Remove and replace computer hardware to LRU.
- 14.2. Software Principles.
  - 14.2.1. Identify the basic components of operating systems.
  - 14.2.2. Install/configure UNIX-based operating systems.
  - 14.2.3. Install/configure Windows-based operating systems.
  - 14.2.4. Identify the difference between operating systems and application software.
  - 14.2.5. Identify differences between hardware and software faults.

**\*15. ENCRYPTION DEVICES.**

- 15.1. TSEC/KG-84 limited maintenance.
  - 15.1.1. Perform limited maintenance on the TSEC/KG-84.
  - 15.1.2. Perform Manual Rekey (OTAR).
  - 15.1.3. Perform Manual Cooperative Key Transfer (MK/RV).
  - 15.1.4. Identify facts concerning authorized equipment modifications.
  - 15.1.5. Inspect equipment for authorized modifications.
  - 15.1.6. Perform Automatic Rekey (AK/Net OTAR).
- 15.2. TSEC/KG-194 Limited Maintenance.
  - 15.2.1. Perform limited maintenance on the KG-194.
- 15.3. Common Fill Devices.
  - 15.3.1. State basic facts pertaining to Common Fill Devices.
  - 15.3.2. Perform a key transfer operation.
- 15.4. Configure bulk encryption devices for operations.
- 15.5. Configure I.P. encryption devices for operations.

**\*16. INFORMATION TRANSPORT DEVICES (Modems, Multiplexers).**

- 16.1. Configure a modem for operation.
- 16.2. Configure a multiplexer for operation.
- 16.3. Perform an operational check of a modem.
- 16.4. Perform an operational check of a multiplexer.
- 16.5. Isolate malfunction to LRU in a modem.
- 16.6. Isolate malfunction to LRU in a multiplexer.

**\*17. NETWORK SUSTAINMENT.**

- 17.1. Fabricate twisted-pair interface cables.
- 17.2. Terminate inside cable using an impact tool.
- 17.3. Configure data equipment in a network.
- 17.4. Configure voice equipment in a network.
- 17.5. Perform data network operational check.
- 17.6. Perform voice network operational check.



- 17.7. Perform a key change operation on a network.
- 17.8. Configure network timing.
- 17.9. Configure circuits using patch panel.
- 17.10. Perform circuit loop-backs (hardware) using patch panel.
- 17.11. Perform circuit loop-backs (software) using built in test equipment.
- 17.12. Restore data circuit operation.
- 17.13. Restore voice circuit operation.
- 17.14. Perform Bit Error Rate Test on single system with local loop-back.
- 17.15. Perform Bit Error Rate Test on end-to-end system.
- 17.16. State facts concerning the effect of noise in analog and digital circuits.
- 17.17. State facts concerning the effect of timing problems in analog and digital circuits.
- 17.18. State facts concerning the effect of line loss in analog and digital circuits.
- 17.19. Identify network data signal flow.
- 17.20. Identify network timing signal flow.
- 17.21. Identify network control signal flow.
- 17.22. State facts relating to bit error rate test.
- 17.23. Isolate faulty network equipment.
- 17.24. Configure Virtual Private Network (VPN).

**18. NETWORK SECURITY.**

- 18.1. State facts relating to network vulnerabilities.
- 18.2. Identify preventative measures.
- 18.3. Describe reporting procedures.

### BEHAVIORAL FORMAT CTG CODING SYSTEM

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
A	Subject Knowledge Level - Can identify basic facts and terms about the subject. (FACTS)
B	Subject Knowledge Level - Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
C	Subject Knowledge Level - Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
D	Subject Knowledge Level - Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CBTs, and CDCs, or a combination of OJT, CBTs, and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate the equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT.

**CDC column.** The use of proficiency coding indicates the level of knowledge training provided by the CDCs, The CDC column will now identify the subject knowledge level covered in the CDC. The "K" will no longer be used to identify the knowledge covered in the CDC. Information pertaining to the meaning of the code can be located in the CTG coding system table.

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an "X" denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either "X" or "X\*". If the tasks are coded "X," they are mandatory. If coded "X\*," they are duty position specific.

The identification blocks listed below are to be used to list all personnel authorized to sign off tasks in Part II of the CFETP, including automated CFETP's as per [AFI 36-2201, Vol 3.](#)

<p><i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i></p> <p>Personal Data - Privacy Act of 1974</p>		
PRINTED NAME OF TRAINEE <i>(Last, First, Middle Initial)</i>	INITIALS <i>(Written)</i>	SSAN
PRINTED NAME OF TRAINER AND WRITTEN INITIALS		
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	

## PREFACE

NOTE 1: Users are responsible for annotating technical references to identify current references pending STS revision. Locate current publications at.

DOD Issuances and OSD Administrative Instructions at <http://www.dtic.mil/whs/directives/>  
 Air Force publications at <http://www.e-publishing.af.mil/>.  
 AFSSIs at <https://private.afca.af.mil/ip/>  
 AFIND 5, DISA Circulars and Instructions at <https://disa-ca.dtic.mil/pubs/>  
 Technical Orders (TO) at <https://www.toindex-s.wpafb.af.mil/>  
 Online ReferenceWare and CBTs: <https://www.my.af.mil/faf/FAF/fafHome.jsp> (Select "IT E-Learning" link under *Top Viewed: Training*)

NOTE 2: AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training is mandatory for use in conjunction with this CTG. It sets the Air Force standard for qualification and certification for the following subject areas:

- Communications-Electronics Enlisted Specialty Training
- Information Security (INFOSEC)
- Communications Security (COMSEC)
- Physical Security
- Electronic Warfare
- Operational Risk Management
- Training
- Supply
- Technical Orders (TO) and Technical Publications
- Supervision
- C-E Equipment Maintenance Management
- C-E Equipment Maintenance System Inspecting, Reporting, and Forms

NOTE 3: Equipment/system knowledge and/or performance tasks are defined in the AFJQS. AFJQS items set the standard for qualification and certification and are mandatory for use in conjunction with this CTG. AFQTPs listed in the CTG are generally handbooks which do not have task listings, therefore tracking through the Integrated Maintenance Database System (IMDS) is not possible. Annotate completion of these products on AF Form 623A.

NOTE 4: When an AFJQS is loaded into IMDS, letters in the AFJQS identifier are converted to the number representing each letter's alphabetical position (e.g., 200B would be loaded as 200.2). To save space, individual AFJQS tasks are not normally listed within the CTG. However, if a CTG task is closely related to an AFJQS task or area, the AFJQS task/heading is listed (e.g., 200.2.12) and the related CTG task is listed under it (e.g., 200.2.12.75). To prevent potential task numbering conflicts between AFJQS tasks and subordinate CTG tasks, subordinate CTG tasks start with the number 75. This creates gaps in the final task numbering sequence, but integrates related CTG and AFJQS tasks so they will be listed on your training documents in the same area and in order.

NOTE 5: When loading AFJQS tasks into the IMDS database, tasks are loaded as STS not 797 items.

NOTE 6: If not formerly qualified (DD Form 1435) or the last date on the DD Form 1435 is more than three years old, a Specialty Training Package (STP) must be completed as part of qualification training prior to certification (Reference AFI 21-109). STPs will be used unless tech school provided the training.

NOTE 7: These tasks are EMSEC QTPs for strapping only. Strapping is also covered in the STP for limited and depot maintenance personnel. EMSEC QTPs listed in the CTG do not have task listings therefore tracking through the IMDS is not possible. Annotate completion of these products on AF Form 623A.

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
<b>1. COMMUNICATIONS-ELECTRONICS (C-E)</b> <a href="#">AFECD, 2E2X1 CFETP, Part I</a>							
1.1. Explain the duties, responsibilities and progression in assigned Air Force Specialty (AFS)	X	A					
1.2. Read CFETP 2E2X1, Part I.	X	-					
<b>2. MAINTENANCE MANAGEMENT OF C-E SYSTEMS</b> TR: <a href="#">AFI 21-116</a> , <a href="#">AFI 36-2201, Vol 3</a>							
2.1. State facts related to the following Maintenance Management Policies	-	-					
2.1.1. Equipment Readiness	-	A					
2.1.2. Maintenance Staffing and Utilization	-	A					
2.1.3. Maintenance Training	-	A					
2.1.4. Communications Standardization and Evaluation Program (CSEP)	-	A					
2.1.5. Maintenance Information Systems (MIS)	-	A					
2.2. Assigned Maintenance Responsibilities	-	A					
2.3. Categories Of Maintenance Organizations	-	A					
2.4. Maintenance Operations Center (MOC)	-	A					
2.5. Quality Assurance (QA)	-	A					
2.6. Materiel Control	-	A					
2.7. Maintenance Production Work Centers	-	A					
2.8. Deployed Maintenance Management	-	A					
2.9. Logistics Support	-	A					
<b>3. TEST EQUIPMENT.</b> TR: TO 33K-1-100, Applicable test equipment technical orders							
3.1. Identify principles, capabilities, and limitations of the following test equipment items:							
3.1.1. Analog oscilloscope.	-	A					
3.1.2. Digital oscilloscope.	-	A					
3.1.3. Spectrum analyzer.	-	A					
3.1.4. Analog multimeter.	-	A					
3.1.5. Digital multimeter.	-	A					
3.1.6. Power meter.	-	A					
3.1.7. Optical time domain reflectometer.	-	A					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
3.1.8. Time domain reflectometer.	-	A					
3.1.9. Bit error rate test set.	-	A					
3.1.10. RF signal generator.	-	A					
3.1.11. Frequency counter.	-	A					
3.1.12. Insulation test set.	-	A					
3.2. Perform equipment maintenance using the following common test equipment items.							
3.2.1. Analog oscilloscope.	X*	-					
3.2.2. Digital oscilloscope.	X*	-					
3.2.3. Spectrum analyzer.	X*	-					
3.2.4. Analog multimeter.	X*	-					
3.2.5. Digital multimeter.	X*	-					
3.2.6. Power meter.	X*	-					
3.2.7. Optical time domain reflectometer.	X*	-					
3.2.8. Time domain reflectometer.	X*	-					
3.2.9. Bit error rate test set.	X*	-					
3.2.10. RF signal generator.	X*	-					
3.2.11. Frequency counter.	X*	-					
3.2.12. Insulation test set.	X*	-					
<b>4. STANDARD MAINTENANCE PRACTICES.</b> TR: TOs 00-25-234, 31-10-7, 31-10-11, 31-10-13, 31-10-24, 31W-1-102, 31-141-1 volume 1, 31W2-4-330 series, and 31W3-10-20, TIA/EIA-568A & 569; AFI 32-1065, AFJQS 2EXXX-202B, MIL-STD 2000A, <a href="#">American Public Works Association Policy and American National Standard Institute Standard (ANSI) Z53.1</a>							
4.1. State facts related to the following practices:							
4.1.1. Installation.	-	A					
4.1.2. Configuration.	-	A					
4.1.3. Interconnection.	-	A					
4.1.4. Inspection.	-	A					
4.2. Describe the requirements for marking and identifying underground utilities	-	A					
4.3. Describe EMSEC suppression techniques.	-	A					
4.4. Describe the importance of cable labeling and installation documentation.	-	A					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
4.5. Describe wire color-coding standards.	-	A					
4.6. Describe fiber optics installation concepts.	-	A					
4.7. Describe the concepts of:							
4.7.1. Grounding.	-	A					
4.7.2. Bonding.	-	A					
4.7.3. Shielding.	-	A					
4.7.4. Lightning protection.	-	A					
4.8. Remove or install equipment grounds.	X*	-					
4.9. Check quality of equipment grounds.	X*	-					
4.10. Check quality of lightning protection system.	X*	-					
<b>5. COMMUNICATIONS PRINCIPLES.</b> TR: TO 31-1-141 Series							
5.1. State facts relating to the following:							
5.1.1. Amplitude Modulation (AM).	-	A					
5.1.2. Frequency Modulation (FM).	-	A					
5.1.3. Phase Modulation (PM).	-	A					
5.1.4. Pulse Code Modulation (PCM).	-	A					
5.1.5. Bandwidth.	-	A					
5.1.6. Lightwave communications.	-	A					
5.1.7. Asynchronous/synchronous communication modes.	-	A					
5.1.8. Error detection and correction.	-	A					
<b>6. AIR FORCE COMPUTER BASED TRAINING (Note 1)</b> <a href="https://www.my.af.mil/skillportcbtprod/scusaf/usaflogin/usafseamlesslogin.cfm">https://www.my.af.mil/skillportcbtprod/scusaf/usaflogin/usafseamlesslogin.cfm</a>							
6.1. 2EXXX Core Fundamentals Training Tracks							
6.1.1. Introduction to Telecommunications ( <a href="#">72111 ENG</a> )	X	-					
6.1.2. Introduction to Signals and Signal Transmission ( <a href="#">84650 ENG</a> )	X	-					
6.1.3. Introduction to Communications Methods and Equipment ( <a href="#">110725 ENG</a> )	X	-					
6.1.4. Networking Essentials ( <a href="#">31843 ENG</a> )	X	-					
6.1.5. Create Your Time and Memory Management Program ( <a href="#">PD0124 ENG</a> )	X	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
6.1.6. Introduction to WAN Technologies ( <a href="#">110726_eng</a> )	X	-					
6.2. 2E2X1 Voice Network Systems Technician Track.							
6.2.1. UNIX	X*	-					
6.2.2. Intro to Private Network Solutions (VPN)	X	-					
6.2.3. Intro to IP v6	X	-					
<b>7. EXPEDITIONARY COMMUNICATIONS CONCEPTS.</b> TR: <a href="https://aefcenter.afpc.randolph.af.mil/">https://aefcenter.afpc.randolph.af.mil/</a>							
7.1. Identify basic concepts of the Air and Space Expeditionary Force (AEF) deployment process. TR: <a href="#">AFI 10-401</a>	X	A					
7.2. Explain basic concepts of Unit Type Codes (UTC) and Force Packaging as it relates to the AEF tasking process. TR: <a href="#">AFI 10-401</a> , <a href="https://cadremil.maxwell.af.mil/ws/CWPC/Course_IPs.html">https://cadremil.maxwell.af.mil/ws/CWPC/Course_IPs.html</a> (IP 4200)	X	A					
7.3. Describe deployment procedures. TR: <a href="#">AFMAN 10-100</a> ; MAJCOM and Local Directives							
7.3.1. Pre-deployment.	X	A					
7.3.2. Employment.	X	A					
7.3.3. Post deployment.	X	A					
7.3.4. Recovery.	X	A					
7.4. Accomplish the following mobility procedures: TR: Applicable MAJCOM directives, TOs 00-20-series							
7.4.1. Pre-deployment inspections.	X*	-					
7.4.2. Air mobility equipment preparation.	X*	-					
7.4.3. Road mobility equipment preparation.	X*	-					
7.4.4. Post-deployment turn around.	X*	-					
<b>8. TYPICAL DEPLOYABLE C-E MISSIONS</b> TR: <a href="#">AFMAN 10-100</a> , MAJCOM and Local Directives							
8.1. Identify basic concepts of the following C-E deployable missions.							
8.1.1. Theater Deployable Communications (TDC)	-	A					



TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
8.1.2. Deployable Air Traffic Control Systems (DATCALs)	-	A					
8.1.3. Engineering & Installation	-	A					
8.1.4. C4ISR Platforms							
8.1.4.1. Air Operations Centers		A					
8.1.4.2. Battlefield Control System	-	A					
8.1.4.3. Air Support Operations Squadrons	-	A					
8.1.4.4. Airborne Platforms	-	A					
8.1.4.5 Unmanned Aerial Vehicles (UAV)	-	A					
<b>9. ELECTRICAL POWER SYSTEMS.</b> TR: Commercial Manuals							
9.1. Describe the application of the following types of uninterruptible power supplies:							
9.1.1. Batteries.	-	A					
9.1.2. Switched electrical power systems.	-	A					
9.2. Describe the application of the following types of generators:							
9.2.1. Fixed.	-	A					
9.2.2. Deployable	-	A					
<b>10. TRANSMISSION MEDIA CONCEPTS.</b> TR: TO 31-1-141 Series							
10.1. Explain wireless concepts.							
10.1.1. Microwave.	X*	A					
10.1.2. Satellite.	X*	A					
10.1.3. Radio.	X*	A					
10.1.4. Laser.	X*	A					
10.2. Explain land line concepts.							
10.2.1. Copper cables.	X*	A					
10.2.2. Coaxial cables.	X*	A					
10.2.3. Fiber optic cable.	X*	A					
<b>11. NETWORK OPERATING PRINCIPLES.</b>							
11.1. Data Representation	X	B					
11.2. Standards	X	A					
11.3. OSI Reference Model	X	B					
11.4. Topologies	X	B					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
11.5. Protocols	X	B					
11.6. Network Concepts	X	B					
11.7. Network Planning	X	B					
11.8. Describe the function and characteristics of computer hardware/peripheral devices: CPU, memory, motherboard, power supply, data storage, input/output devices.	X	B					
11.9. Software Principles/Operating Systems (UNIX, Windows, Windows NT, MS DOS). TR: Computer, Network, and Cryptographic Systems Technician; CBT Volume--Internet and Intranet Infrastructure: Unix: Overview, Essentials of Windows; CBT Volume--Microsoft Windows NT: Essentials <a href="https://www.my.af.mil/skillportcbtprod/scusaf/usaflogin/usafseamlesslogin.cfm">https://www.my.af.mil/skillportcbtprod/scusaf/usaflogin/usafseamlesslogin.cfm</a>							
11.9.1. Identify the basic architecture of the operating system.	X	A					
11.9.2. Describe relationship between operating systems and application software.	X	A					
11.9.3. Install/configure operating systems. TR: MAJCOM and local procedures	X*	-					
11.10. Network Hardware Devices	X	B					
<b>12. OPERATE COMMON FILL DEVICES.</b>							
12.1. Perform a KOI-18 transfer.	X*	-					
12.2. Perform a KYK-13 transfer.	X*	-					
12.3. Perform a KYX-15 transfer.	X*	-					
12.4. Perform a CYZ-10/A transfer.	X*	-					
12.5. Perform a DTD transfer	X*	-					
<b>13. INFORMATION TRANSPORT DEVICES (MODEMS, MULTIPLEXERS, ROUTERS, HUBS, SWITCHES, BRIDGES, FIREWALL, VIRTUAL PRIVATE NETWORK (VPN)).</b> TR: Applicable commercial manuals							
13.1. Modems.							
13.1.1. Configure for operation.	X*	-					
13.1.2. Perform operational check.	X*	-					
13.1.3. Isolate malfunction to LRU.	X*	-					
13.1.4. Remove and replace LRU.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
13.2. Multiplexers.							
13.2.1. Configure for operation.	X*	-					
13.2.2. Perform operational check.	X*	-					
13.2.3. Isolate malfunction to LRU.	X*	-					
13.2.4. Remove and replace LRU.	X*	-					
13.3. Routers.							
13.3.1. Configure for operation.	X*	-					
13.3.2. Perform operational check.	X*	-					
13.3.3. Isolate malfunction to LRU.	X*	-					
13.3.4. Remove and replace LRU.	X*	-					
13.4. Hubs.							
13.4.1. Configure for operation.	X*	-					
13.4.2. Perform operational check.	X*	-					
13.4.3. Isolate malfunction to LRU.	X*	-					
13.4.4. Remove and replace LRU.	X*	-					
13.5. Switches.							
13.5.1. Configure for operation.	X*	-					
13.5.2. Perform operational check.	X*	-					
13.5.3. Isolate malfunction to LRU.	X*	-					
13.5.4. Remove and replace LRU.	X*	-					
13.6. Bridges.							
13.6.1. Configure for operation.	X*	-					
13.6.2. Perform operational check.	X*	-					
13.6.3. Isolate malfunction to LRU.	X*	-					
13.6.4. Remove and replace LRU.	X*	-					
13.7. Firewall.							
13.7.1. Configure for operation.	X*	-					
13.7.2. Perform operational check.	X*	-					
13.7.3. Isolate and repair malfunctions.	X*	-					
13.8. VPN							
13.8.1. Configure for operation.	X*	-					
13.8.2. Perform operational check.	X*	-					
13.8.3. Isolate and repair malfunctions.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
<b>14. NETWORK SUSTAINMENT.</b>							
14.1. Perform network operational check.	X*	-					
14.2. Perform a change key operation on a network.	X*	-					
14.3. Configure network timing (sync, async, etc...)	X*	-					
14.4. Perform the following patch panel applications:							
14.4.1. Trace network signals.	X*	-					
14.4.2. Perform system loopbacks.	X*	-					
14.4.3. Restore circuit operation.	X*	-					
14.5. Perform a bit error rate test.							
14.5.1. One test set/single system with local loopback.	X*	-					
14.5.2. Two test sets/point-to-point.	X*	-					
14.6. Identify common causes of transmission impairment in analog and digital circuits.							
14.6.1. Noise.	-	B					
14.6.2. Timing.	-	B					
14.6.3. Line loss.	-	B					
14.6.4. Latency	-	B					
14.7. Trace the following network signals:							
14.7.1. Data.	X*	-					
14.7.2. Timing.	X*	-					
14.7.3. Control.	X*	-					
14.8. Isolate faulty network equipment.	X*	-					
14.9. Perform Network Management TR: Applicable management tools	-	-					
<b>15. COMPUTER AND SWITCHING MISSION SYSTEMS.</b>							
15.1. State facts relating to the following systems:							
15.1.1. Battle Control System-Fixed (BCS-F)	X*	A					
15.1.2. Air Force Mission Support System.	X*	A					
15.1.3. Modular Control Element (MCE).	X*	A					
15.1.4. Command and Control Aircraft.							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
15.1.4.1. Airborne Warning and Control System (AWACS). TR: <a href="http://www.af.mil/factsheets/factsheet_print.asp?fslD=98&amp;page=1">http://www.af.mil/factsheets/factsheet_print.asp?fslD=98&amp;page=1</a>	X*	A					
15.1.4.2. Unmanned Aerial Vehicles (UAV).							
15.1.4.2.1. Global Hawk. TR: <a href="http://www.af.mil/factsheets/factsheet_print.asp?fslD=175&amp;page=1">http://www.af.mil/factsheets/factsheet_print.asp?fslD=175&amp;page=1</a> ,	X*	A					
15.1.4.2.2. Predator. TR: <a href="http://www.af.mil/factsheets/factsheet_print.asp?fslD=122&amp;page=1">http://www.af.mil/factsheets/factsheet_print.asp?fslD=122&amp;page=1</a>	X*	A					
15.1.5. Strategic Communications System (STRATCOM).	X*	A					
15.1.6. Theater Deployable Communications. TR: <a href="http://www.gdc4s.com/content/detail.cfm?item=69652ba2-38ae-485a-844e-79134420c339">http://www.gdc4s.com/content/detail.cfm?item=69652ba2-38ae-485a-844e-79134420c339</a>	X*	B					
15.1.7. Intel Systems.							
15.1.7.1. NSANET Network Control Center. TR: <a href="http://www.imperialviolet.org/nsanet.html">http://www.imperialviolet.org/nsanet.html</a>	X*	A					
15.1.7.2. Distributed Common Ground Station (DCGS). TR: <a href="https://aiaweb.lackland.af.mil/homepages/lg/">https://aiaweb.lackland.af.mil/homepages/lg/</a>	X*	A					
15.1.7.3. Electronic System Security Assessment (ESSA).	-	A					
15.1.7.4. Ground Data Processing System (GDPS). TR: <a href="https://aiaweb.lackland.af.mil/homepages/lg/">https://aiaweb.lackland.af.mil/homepages/lg/</a>	X*	A					
15.1.7.5. Mobile Stretch (MOBSTR).	X*	A					
15.1.8. Defense Dissemination System (DDS).	X*	A					
15.1.9. Global Broadcast Service (GBS)	X*	A					
15.1.10. Air Operations Center (AOC)	X*	A					
15.1.11. Air Support Operations (ASO)	X*	A					
15.1.12. Global Positioning System (GPS)	X*	A					
15.1.13. Defense Support Program (DSP)	X*	A					
15.1.14. Spaced-Based Infrared System (SBIRS)	X*	A					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
<b>16. MISSILE NUCLEAR SURETY PROGRAM</b> TR: TO 21M-LGM30G-2-10.							
16.1. Explain the principles of the AF Nuclear Surety Program.	X*	-					
16.2. Identify the purpose of the AF Two Person concept.	X*	-					
16.3. Perform launch facility/soft support building entry, departure, and emergency isolation procedures.	X*	-					
<b>17. COMMON MISSILE COMMUNICATIONS EQUIPMENT MAINTENANCE.</b>							
17.1. Maintain telephone switches/key systems.	-	-					
17.2. Maintain system telephones.	-	-					
<b>18. INFORMATION ASSURANCE (IA).</b> TR: ACP 122, AFH 31-602, AFIs 10-701, 33-202 V1, 33-203 V1, 33-204, 33-206, 33-207, 33-332; AFMAN 33-223, AFSSI 5020, 5021, AFD 33-2, DISAC 310-90-1; TO 31S5-4-2987-1, AFI 33-272(S), 33-115							
18.1. State facts relating to the following:							
18.1.1. Identification and Authentication.	X*	A					
18.1.2. Remanence Security.	X*	A					
18.1.3. Certification and Accreditation.	X*	A					
18.1.4. Event Response.							
18.1.4.1. Reporting Hierarchy.	X*	A					
18.1.4.2. INFOCON.	X*	A					
18.1.5. Security patch Implementation.	X*	A					
18.1.6. Malicious logic protection devices (e.g. anti virus, SMTP relay, MIME filters).	X*	A					
18.1.7. Defensive in-depth. TR: CJCSM 6510.01 (enclosure B).							
18.1.7.1. Concept.	X*	A					
18.1.7.2. Steps.	X*	A					
18.1.8. Base Information Protection (BIP)							
18.1.8.1. Boundary protection.	X*	A					
18.1.8.2. Intrusion/misuse detection.	X*	A					
18.1.8.3. Internal control.	X*	A					
18.1.8.4. Access preservation.	X*	A					
18.1.8.5. Authentication/ encryption.	X*	A					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
18.1.8.6. Security tools (e.g. firewalls, TCP Wrappers).	X*	A					
<b>200. AIR FORCE JOB QUALIFICATION STANDARDS APPLICABLE TO AFSC 2E2X1.</b> TR: AFI 21-116, 36-2233, CFETP 2E2X1 (See Notes 3 and 4)							
200.2. AFJQS 2EXXX-200B, 2EXXX C-E Enlisted Specialty Training. (See Note 2)	X						
200.2.3. COMMUNICATIONS SECURITY (COMSEC).							
200.2.3.75. State facts relating to Transmission Security (TRANSEC). TR: AFSSI 4100	X	-					
200.2.3.76. Use AFCOMSEC Form 22 to identify special handling requirements of COMSEC. TR: AFI 33-211; AFCOMSEC Form 22	X*	-					
200.2.3.77. Identify crypto periods. TR: AFCOMSEC Form 22	X*	A					
200.2.4. PHYSICAL SECURITY.							
200.2.4.75. Identify improperly connected COMSEC equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	A					
200.2.4.76. Identify improperly connected test equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	A					
200.2.4.77. Identify incorrectly maintained emanation suppression components. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	-					
200.2.4.78. Identify improperly separated equipment. TR: AFI 33-203, AFSSI 7010 (S), AFSSM 7011	X	-					
200.3.8. AFJQS XXXXX-200CH, Infrastructure Technician	X*	-					
200.3.10. AFJQS XXXXX-200CJ, Configuration Management Technician	X*	-					
200.4. AFJQS XXXXX-200D, Integrated Maintenance Data Systems Handbook.	X						
201.3. AFJQS 2EXXX-201C, Corrosion Prevention and Control.	X						
201.6. AFJQS 2EXXX-201F, Maintenance Control.	X*						
201.7. AFJQS 2EXXX-201G, Quality Assurance	X*						

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
201.8. AFJQS 2EXXX-201H, Work Center Deficiency/Discrepancy Reporting.	X*						
201.10. AFJQS 2EXXX-201J, Maintenance Training Program.	X*						
201.16. AFJQS 2EXXX-201P, Work Center Test Equipment Management.	X*						
201.20.2. AFJQS 2E2X1-201TB, Modular Control Equipment.	X*						
201.20.3. AFJQS 2E2X1-201TC, Joint Surveillance System	X*						
201.23. AFJQS XXXXX-201W, Integrated Digital Network Exchange (IDNX-90).	X*						
201.24. AFJQS 2EXXX-201X, Engineering and Installation (EI) Quality Assurance.	X*						
202.1. AFQTP 2EXXX-202A, Electrostatic Discharge Familiarization Handbook.	X*						
202.2. AFJQS 2EXXX-202B, SIPT Electronics and Inside Plant (E&I).	X*						
202.4. AFQTP 2EXXX-202D, EI Tempest Installation Handbook.	X*						
204.22. AFJQS 2E1X1-204V, AN/FCC-100(V)7 & 9 Multiplexer Set.	X*						
208.8. AFJQS 2E2X1-208H, SB3865/3614A Automatic Telephone Switchboard.	X*						
208.11. AFJQS 2E2X1-208K, CC2/CC2E Maintenance.	X*						
208.13. AFJQS 2E2X1-208M, AN/FYQ-93 Joint Surveillance System (JSS).	X*						
208.14. AFJQS 2E2X1-208N, Battle Control System-Fixed (BCS-F).	X*						
209.5.4. AFJQS 2EXXX-209ED, Air Force Mission Support System (AFMSS) Mission Planning Subsystem (MPS) Maintenance.	X*						
210.2. AFJQS 2E2X2-210B, Joint Surveillance System	X*						
210.11. AFJQS 2EXXX-210K, 6KNZC: C-E Cryptographic/Computer Systems Support	X*						
211.2.1. AFJQS 2E2X1-211BA, WS-133B Missile Control Communications System On-Equipment Maintenance.	X*						
211.2.2. AFJQS 2E2X1-211BB, WS-133B Missile Control Communications System Off-Equipment Maintenance.	X*						



TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
211.3.1. AFJQS 2E2X1-211CA, WS-133A Missile Control Communications System On-Equipment Maintenance.	X*						
211.3.2. AFJQS 2E2X1-211CB, WS-133A Missile Control Communications System Off-Equipment Maintenance (W/GSM-315).	X*						
211.3.25.1. AFQTP 2E2X1-211CYA Missile Communications Familiarization	X*						
211.4. AFJQS 2EXXX-211D, Constant Source.	X*						
<b>600. CRYPTOGRAPHIC EQUIPMENT.</b> <i>Prior completion of STP or formal training required for maintenance. (See Notes 6 and 7)</i>							
600.1. E6AZS2E251 01AA, TSEC/KG-30 SERIES LIMITED MAINTENANCE. TR: KAO-137; KAM-243, -244, -287, and -330							
600.1.1. Install equipment	X*	-					
600.1.2. Configure for system operation.	X*	-					
600.1.3. Perform system operation check.	X*	-					
600.1.4. Isolate faulty system equipment item.	X*	-					
600.1.5. Perform system restoration procedures.	X*	-					
600.2. E6AZS2E251 01BA, TSEC/KG-81 LIMITED MAINTENANCE. TR: KAO-179; KAM-330 and KAM-366B							
600.2.1. Configure for system operation.	X*	-					
600.2.2. Perform systems operation check.	X*	-					
600.2.3. Isolate faulty system equipment item.	X*	-					
600.2.4. Perform system restoration procedures.	X*	-					
600.3. COMSEC QTP ANT 8101, TSEC/KG-81 STRAPPING. (See Note 7)	X*	-					
600.4. E6AZS2E251 01CA, TSEC/KG-84 SERIES LIMITED MAINTENANCE. TR: KAO-184; KAM-330; LMM-2A and LMM-5A							
600.4.1. Configure for system operation.	X*	-					
600.4.2. Perform system operation check.	X*	-					
600.4.3. Isolate faulty system equipment item.	X*	-					
600.4.4. Perform system restoration procedures.	X*	-					
600.5. COMSEC QTP AMT 8401, TSEC/KG-84 STRAPPING. (See Note 7)	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.6. E6AZS2E251 01DA, TSEC/KI-1 SERIES LIMITED MAINTENANCE. TR: KAM-225E, LMM-24A, and KAM-330							
600.6.1. Configure for system operation.	X*	-					
600.6.2. Perform system operation check.	X*	-					
600.6.3. Isolate faulty system equipment item.	X*	-					
600.6.4. Perform system restoration procedures.	X*	-					
600.7. E6AZS2E251 01EA, TSEC/KY-57/58 LIMITED MAINTENANCE. TR: KAO-168A; KAM-330, KAM-336A, and KAM-337A							
600.7.1. Configure for system operation.	X*	-					
600.7.2. Perform system operation check.	X*	-					
600.7.3. Isolate faulty system equipment item.	X*	-					
600.7.4. Perform system restoration procedures.	X*	-					
600.8. E6AZS2E251 01FA, TSEC/KY-65/75 LIMITED MAINTENANCE. TR: KAO-154B; KAM-330, KAM-333B, and KAM-334A							
600.8.1. Configure for system operation.	X*	-					
600.8.2. Perform system operation check.	X*	-					
600.8.3. Isolate faulty system equipment item.	X*	-					
600.8.4. Perform system restoration procedures.	X*	-					
600.9. E6AZS2E251 01HA, TSEC/KG-94/94A/194/194A LIMITED MAINTENANCE. TR: KAM-330, LMM-20, and LMM-19; SAM-153							
600.9.1. Configure for system operation.	X*	-					
600.9.2. Perform system operation check.	X*	-					
600.9.3. Isolate faulty system equipment item.	X*	-					
600.9.4. Perform system restoration procedures.	X*	-					
600.10. COMSEC QTP AOT 9401, TSEC/KG-94/94A STRAPPING. (See Note 7)	X*	-					
600.11. E6AZS2E251 01IA, TSEC/KGV-8/11 DEPOT MAINTENANCE. TR: MAMM-436 and MAMM-512 Vol. I & II; SAMM-83 Vol. I thru III	X*	-					
600.12. E6AZS2E251 01JA, TSEC/KY-71 LIMITED MAINTENANCE. TR: KAO-191B; KAM-330 and KAM-429B							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.12.1. Configure for system operation.	X*	-					
600.12.2. Perform system operation check.	X*	-					
600.12.3. Isolate faulty system equipment item.	X*	-					
600.12.4. Perform system restoration procedures.	X*	-					
600.13. E6AZS2E251 01KA, TSEC/CI-10 LIMITED MAINTENANCE. TR: KAM-421B; SAM-8A							
600.13.1. Configure for system operation.	X*	-					
600.13.2. Perform system operation check.	X*	-					
600.13.3. Isolate faulty system equipment item.	X*	-					
600.13.4. Perform system restoration procedures.	X*	-					
600.14. COMSEC QTP AFT 1001, TSEC/CI-10 STRAPPING. (See Note 7)	X*	-					
600.15. E6AZS2E251 01LA, TSEC/KY-68/78 LIMITED MAINTENANCE. TR: KAO-193A; KAM-330 and KAM-403A							
600.15.1. Configure for system operation.	X*	-					
600.15.2. Perform system operation check.	X*	-					
600.15.3. Isolate faulty system equipment item.	X*	-					
600.15.4. Perform system restoration procedures.	X*	-					
600.16. COMSEC QTP ART 6801, TSEC/KY-68/78 STRAPPING. (See Note 7)	X*	-					
600.17. E6AZS2E251 01MA, COMSEC AWARENESS TRAINING. TR: Self-contained course	X*	-					
600.18. E6AZS2E251 01NA, TSEC/KGR-28/KGT-7 LIMITED MAINTENANCE. TR: AFKAM-228; AFSAM-123							
600.18.1. Configure for system operation.	X*	-					
600.18.2. Perform system operation check.	X*	-					
600.18.3. Isolate faulty system equipment item.	X*	-					
600.18.4. Perform system restoration procedures.	X*	-					
600.19. E6AZS2E251 01OA, TSEC/KG-28/29 LIMITED MAINTENANCE. TR: KAO-135; AFSAM-23, -24B, -26, and -27; AFKAM-228 and AFKAM-229; SAM-24 and SAM-25							
600.19.1. Configure for system operation.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.19.2. Perform system operation check.	X*	-					
600.19.3. Isolate faulty system equipment item.	X*	-					
600.19.4. Perform system restoration procedures.	X*	-					
600.20. E6AZS2E251 01PA, TSEC/KG-83 OPERATIONAL CERTIFICATION TRAINING. TR: AFSAM-70A	X*	-					
600.21. E6AZS2E251 01QA, TSEC/KY-90 LIMITED MAINTENANCE. TR: KAM-330 and KAM-435A							
600.21.1. Configure for system operation.	X*	-					
600.21.2. Perform system operation check.	X*	-					
600.21.3. Isolate faulty system equipment item.	X*	-					
600.21.4. Perform system restoration procedures.	X*	-					
600.22. E6AZS2E251 01RA, TRI-TAC (TTC-39/TYC-39/ TTC-42) COMSEC EQUIPMENT LIMITED MAINTENANCE. TR: KAM-393A, -395A, -401A, -405B, and -407A; SAM-7A; NAM-24A Vols. I thru III							
600.22.1. Configure for system operation.	X*	-					
600.22.2. Perform system operation check.	X*	-					
600.22.3. Isolate faulty system equipment item.	X*	-					
600.22.4. Perform system restoration procedures.	X*	-					
600.23. E6AZS2E251 01SA, TSEC/KG-95 DEPOT MAINTENANCE. TR: LMM-12A	X*						
600.24. E6AZS2E251 01VA, TSEC/KG-40A LIMITED MAINTENANCE. TR: LMM-1B							
600.24.1. Configure for system operation.	X*	-					
600.24.2. Perform system operation check.	X*	-					
600.24.3. Isolate faulty system equipment item.	X*	-					
600.24.4. Perform system restoration procedures.	X*	-					
600.25. E6AZS2E251 01WA, TSEC/KY-99 LIMITED MAINTENANCE. TR: LMM-9C							
600.25.1. Configure for system operation.	X*	-					
600.25.2. Perform system operation check.	X*	-					

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	5-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
600.25.3. Isolate faulty system equipment item.	X*	-					
600.25.4. Perform system restoration procedures.	X*	-					
600.26. E6AZS2E251 01XA, TSEC/KG-81 DEPOT MAINTENANCE. TR: KAM-366A and KAM-367A Vol. I & II; SAM-164A; CIDOS 81	X*	-					
600.27. E6AZS2E251 02AA, TSEC/KG-189 LIMITED MAINTENANCE. TR: LMM-8A and LMM-15; KAM-330							
600. 27.1. Configure for system operation.	X*	-					
600. 27.2. Perform system operation check.	X*	-					
600. 27.3. Isolate faulty system equipment item.	X*	-					
600. 27.4. Perform system restoration procedures.	X*	-					

### BEHAVIORAL FORMAT CTG CODING SYSTEM

Each CTG element is written as a behavioral statement. The detail of the statement and verb selection reflects the level of training provided.

Code	Definition
A	Subject Knowledge Level - Can identify basic facts and terms about the subject. (FACTS)
B	Subject Knowledge Level - Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
C	Subject Knowledge Level - Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
D	Subject Knowledge Level - Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
-	When this code is used in the OJT Upgrade Column it indicates that the certification or qualification on this task is a local determination. When this code is used in the CDC Column it indicates that no training for this subject is provided in the CDCs.
X	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level. This code indicates that training to satisfy this requirement is either provided through OJT, CBTs and CDCs, or a combination of OJT, CBTs and CDCs.
X*	When this code is used in the OJT Upgrade Column it indicates that the individual must be trained and certified on this task before they can be upgraded to the appropriate skill level if the assigned duty position is responsible to maintain/operate the equipment or system indicated as assigned by the local work center supervisor. This code indicates that training to satisfy this requirement is normally provided through OJT.

**CDC column.** The use of proficiency coding indicates the level of knowledge training provided by the CDCs, The CDC column will now identify the subject knowledge level covered in the CDC. The "K" will no longer be used to identify the knowledge covered in the CDC. Information pertaining to the meaning of the code can be located in the CTG coding system table.

**CFETP versus AFJQS task coding.** AFJQSs/AFQTPs annotated in the CFETP with an "X" denotes the AFJQS is mandatory. Within the AFJQS are individual tasks that are coded either "X" or "X\*". If the tasks are coded "X," they are mandatory. If coded "X\*," they are duty position specific.

The identification blocks listed below are to be used to list all personnel authorized to sign off tasks in Part II of the CFETP, including automated CFETP's as per [AFI 36-2201, Vol 3.](#)

<p><i>THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY</i></p> <p>Personal Data - Privacy Act of 1974</p>		
PRINTED NAME OF TRAINEE <i>(Last, First, Middle Initial)</i>	INITIALS <i>(Written)</i>	SSAN
PRINTED NAME OF CERTIFYING OFFICIAL AND WRITTEN INITIALS		
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	

## PREFACE

NOTE 1: Users are responsible for annotating technical references to identify current references pending STS revision. Locate current publications at.

DOD Issuances and OSD Administrative Instructions at <http://www.dtic.mil/whs/directives/>

Air Force publications at <http://www.e-publishing.af.mil/>.

AFSSIs at <https://private.afca.af.mil/ip/>

AFIND 5, DISA Circulars and Instructions at <https://disa-ca.dtic.mil/pubs/>

Technical Orders (TO) at <https://www.toindex-s.wpafb.af.mil/>

Online ReferenceWare and CBTs: <https://www.my.af.mil/faf/FAF/fafHome.jsp> (Select "IT E-Learning" link under *Top Viewed: Training*)



TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
<b>70. DEPLOYMENT CONCEPTS.</b> TR: AFI 10-201, AFI 10-244, AFI 10-401 <a href="https://www.afma.randolph.af.mil/orgunits/MAS/WartimeReadiness/Training/TrainingAids/Wartimeoverview.doc">https://www.afma.randolph.af.mil/orgunits/MAS/WartimeReadiness/Training/TrainingAids/Wartimeoverview.doc</a> <a href="https://www.afma.randolph.af.mil/orgunits/MAS/WartimeReadiness/Training/TrainingAids/UTMSummary.doc">https://www.afma.randolph.af.mil/orgunits/MAS/WartimeReadiness/Training/TrainingAids/UTMSummary.doc</a>							
70.1. Describe the purpose of the following:							
70.1.1. OPLAN communications requirements.	X	-					
70.1.2. Time Phased Force Deployment Data (TPFDD).	X	-					
70.1.3. Status Of Resources and Training Systems (SORTS).	X	-					
70.1.4. AEF Reporting Tool (ART).	X	-					
70.1.5. UTC development process.	X	-					
70.1.6. UTC adjustment procedures.	X	-					
70.1.7. Initial Support Element (ISE)							
70.1.7.1. Advanced Echelon (ADVON).	X	-					
70.1.7.2. Main Base.	X	-					
70.1.7.3. Bare Base.	X	-					
70.2. Deployment Procedures. TR: AFIs 10-403, 13-216, 21-109, 33-201, and 33-211; AFMAN 23-110							
70.2.1. Develop load plan.	X*	-					
70.2.2. Explain pallet build-up procedures.	X*	-					
70.2.3. Explain hazardous cargo preparation.	X*	-					
70.2.4. Prepare documentation.	X*	-					
70.2.5. Determine site selection requirements.	X*	-					
70.2.6. Determine site preparation requirements.	X*	-					
70.2.7. Determine site configuration requirements.	X*	-					
70.2.8. Determine requirements for constructing deployment site utility grids.	X*	-					
70.2.9. Describe control of COMSEC material.	X*	-					
<b>71. SYSTEM PLANNING AND IMPLEMENTATION.</b> TR: AFI 33-104 and 21-404; TO 32-series; AFQTP 2EXXX-202B							

TASKS, KNOWLEDGE AND TECHNICAL REFERENCES	7-LEVEL		OJT CERTIFICATION				
	OJT Upgrade	CDC	Start Date	Stop Date	Trainee Initials	Trainer Initials	Certifier Initials
71.1. Identify systems support requirements for new or modified systems.	X	-					
71.2. Describe how to manage planning and implementation of new systems.	X	-					
<b>72. WORKCENTER MANAGEMENT</b>							
72.1. State facts relating to the following work center management principles. TR: AFQTP 2EXXX-201L							
72.1.1. Principles of management.	X	-					
72.1.2. Training.	X	-					
72.1.3. Supply.	X	-					
72.1.4. Core Automated Maintenance System (CAMS)	X	-					
72.1.5. Work center management.	X	-					
72.1.6. Safety and security.	X	-					
72.1.7. Maintenance standards.	X	-					
72.1.8. Performance reports.	X	-					
72.1.9. Awards and recognition.	X	-					
72.1.10. Mobility/deployment.	X	-					
72.1.11. Manpower.	X	-					
72.1.12. Financial management.	X	-					
72.1.13. Publications management	X	-					
<b>73. COMMUNICATIONS-ELECTRONIC (C-E) MANAGEMENT</b>							
73.1. AFQTP 2EXXX-201LB, Communications-Electronic (C-E) Manager's Handbook.	X*	-					
<b>74. NETWORK PLANNING AND IMPLEMENTATION.</b> TR: AFIs 33-115 Vol 1&2, 33-119, 33-207, <a href="http://www.ietf.org/rfc/rfc1035">http://www.ietf.org/rfc/rfc1035</a>							
74.1. Domain/ Internet Protocol (IP) naming service.	X*	-					
74.2. Establish an architecture.	X*	-					

## Section B - Course Objective List

4. This section not used.

## Section C - Support Materials

5. The following is a list of available support materials.

5.1. **Computer Based Training Products.** Air Force computer based training products can be found at Online ReferenceWare and CBTs: <https://www.my.af.mil/faf/FAF/fafHome.jsp> (Select "IT E-Learning" link under *Top Viewed: Training*)

5.2. **Air Force Job Qualification Standards and Air Force Qualification Training Packages.** Refer to <http://www.e-publishing.af.mil/>, product announcements, for the list of published AFJQSs/AFQTPs.

5.2.1. A list of applicable AFJQSs/AFQTPs for AFSC 2E2X1 and additional AFJQS/AFQTP pertaining to maintenance management and generic training products can be found at <https://wwwmil.keesler.af.mil/81trss/qflight/index.htm>

5.2.2. For information on how to request development of AFJQSs/AFQTPs refer to AFI 36-2233, *Air Force On-the-Job Training Products for Communications-Electronics Enlisted Specialty Training*,

5.2.3. Additional AFJQS/AFQTP maintenance management and generic training products applicable to this specialty.

<b><u>Publication No.</u></b>	<b><u>Pseudo File Code</u></b>	<b><u>Publication Title</u></b>
AFJQS 2EXXX-200B	2EXXX-200.2	2EXXX C-E Enlisted Specialty Training
AFJQS XXXXX-200D	2EXXX-20.4	Integrated Maintenance Data Systems Handbook
AFJQS 2EXXX-201C	2EXXX-201.3	Corrosion Prevention and Control
AFJQS 2EXXX-201F	2EXXX-201.6	Maintenance Control
AFJQS 2EXXX-201G	2EXXX-201.7	Quality Assurance
AFJQS 2EXXX-201H	2EXXX-201.8	Work Center Deficiency/Discrepancy Reporting
AFJQS 2EXXX-201J	2EXXX-201.10	Maintenance Training Program
AFQTP 2EXXX-201L	N/A	Communications-Electronics (C-E) Work Center Manager's Handbook
AFQTP 2EXXX-201LB	N/A	Communications-Electronic (C-E) Manager's Handbook
AFJQS 2EXXX-201P	2EXXX-201.16	Work Center Test Equipment Management
AFJQS XXXXX-201W	XXXXX-201.23	Integrated Digital Network Exchange (IDNX-90)
AFJQS 2EXXX-201X	2EXXX-201.24	Engineering Installation (EI) Quality Assurance
AFQTP 2EXXX-202A	N/A	Electrostatic Discharge Familiarization Handbook
AFJQS 2EXXX-202B	2EXXX-202.2	SIPT Electronics and Inside Plant (E&I)
AFQTP 2EXXX-202D	N/A	EI Tempest Installation Handbook
AFJQS 2E6X2-202FB	2E6X2-202.6.2	Reach-All DD-140 Antenna Tower Vehicle (EI UNIT)
AFJQS 2EXXX-209C	2EXXX-209.3	6KNZP: C-E Airfield and Weather Systems Support
AFJQS 2EXXX-209D	2EXXX-209.4	6KNZE: C-E SATCOM /Wide-Band Augmentation
AFJQS 2EXXX-209L	2EXXX-209.12	6KNZP: C-E METNAV Weather Operations
AFJQS 2EXXX-209P	2EXXX-209.16	Maintenance
AFJQS 2EXXX-209Q	2EXXX-209.17	6KNZG: C-E C-2 Radio System Support
		6KNZN: C-E Personal Wireless Communications (PCWS) Systems Support
AFJQS 2EXXX-209W	2EXXX-209.	6KNZPK: C-E Tactical Telephone Switching Systems Support
AFJQS 2EXXX-209S	2EXXX-209.19	6KNZ7: C-E Base Communications Systems Support
AFJQS 2EXXX-211D	2EXXX-211.4	Constant Source
AFQTP 3CXXX-212B	N/A	C4 Systems Technology Handbook
AFJQS XXXXX-212Z	XXXXX-212.26	Global Broadcast Service Ground Receive Suite
AFQTP XXXXX-213T	N/A	Career Field Managers Handbook

<b><u>Publication No.</u></b>	<b><u>Pseudo File Code</u></b>	<b><u>Publication Title</u></b>
AFJQS XXXXX-230RB	XXXX- 230.18.2.	Theater Deployable Communications Integrated Communications Access Package Large Voice Module
AFJQS XXXXX-230RC	XXXXX-230.18.3	Theater Deployable Communications Red Data Module
AFJQS XXXXX-230RD	XXXXX-230.18.4.	Theater Deployable Communications Integrated Communications Access Package Radio Frequency and Crypto Module
AFJQS XXXXX-230RE	XXXXX-230.18.5.	Theater Deployable Communication Integrated Communication Access Package Promina 400 Module
AFJQS XXXXX0230RF	XXXXX-230.18.6.	Theater Deployable Communications/Integrated Communications Access Package (TDC/ICAP) Basic Access Module (BAM)

5.3. **Specialized Training Packages (STP).** Refer to, [https://wwwmil.keesler.af.mil/338trs/comp\\_maint.htm](https://wwwmil.keesler.af.mil/338trs/comp_maint.htm) for product availability and listing of published STPs. For additional information pertaining to ordering or information of STPs contact the STP course(s) supervisor, 338 TRS/VEDV, DSN 597-4607.

<b><u>Course Number</u></b>	<b><u>Course Title</u></b>
E6AZS2E251 01AA	TSEC/KG-30 Series Limited Maintenance
E6AZS2E251 01BA	TSEC/KG-81 Limited Maintenance
E6AZS2E251 01CA	TSEC/KG-84 Series Limited Maintenance
E6AZS2E251 01DA	TSE/KI-1 Series Limited Maintenance
E6AZS2E251 01EA	TSEC/KY-57/58 Limited Maintenance
E6AZS2E251 01FA	TSEC/KY-65/75 Limited Maintenance
E6AZS2E251 01HA	TSEC/KG-94/94A/194/194A Limited Maintenance
E6AZS2E251 01IA	SEC/KGV-8/11/ST-61 Depot Maintenance
E6AZS2E251 01JA	TSEC/KY-71 Limited Maintenance
E6AZS2E251 01KA	TSEC/CI-10 Limited Maintenance
E6AZS2E251 01LA	TSEC/KY-68/78 Limited Maintenance
E6AZS2E251 01MA	COMSEC Awareness Training
E6AZS2E251 01NA	TSEC/KGR-28/KGT-7/ST-19 Limited Maintenance
E6AZS2E251 01OA	TSEC/KG-28/29 Limited Maintenance
E6AZS2E251 01PA	TSEC/KG-83, KT-83 Operational Certification Training
E6AZS2E251 01QA	TSEC/KY-90 Limited Maintenance
E6AZS2E251 01RA	TRI-TAC COMSEC Equipment Limited Maintenance
E6AZS2E251 01SA	TSEC/KG-95 Series, Depot Maintenance
E6AZS2E251 01VA	TSEC/KG-40A Limited Maintenance
E6AZS2E251 01WA	TSEC/KY-99 Limited Maintenance
E6AZS2E251 01XA	TSEC/KG-81 Depot Maintenance
E6AZS2E251 02AA	TSEC/KG-189 Limited Maintenance

5.4. **COMSEC Qualification Training Packages (CQTP).** Refer to, [https://wwwmil.keesler.af.mil/338trs/comp\\_maint.htm](https://wwwmil.keesler.af.mil/338trs/comp_maint.htm) for product availability and listing of published CQTPs. For additional information pertaining to ordering or information of CQTPs contact the STP course(s) supervisor, 338 TRS/VEDV, DSN 597-4607.

<b><u>CQTP Number</u></b>	<b><u>Title</u></b>
CQTP2E251 01LA	TSEC/KY-68/78 Strapping Options
CQTP2E251 01BA	TSEC/KG-81 Strapping Options
CQTP2E251 01CA	TSEC/KG-84 Strapping Options
CQTP2E251 01HA	TSEC/KG-94/94A Strapping Options
CQTP2E251 01KA	TSEC/CI-10 Strapping Options

## **Section D - Training Course Index**

6. The following is a list of the available Air Force in-residence, field, and/or exportable training courses.

6.1. **Air Force In-Residence Courses.** For information on all formal courses, refer to the Air Force Education and Training Course Announcements (ETCA) database, formerly AFCAT 36-2223, USAF Formal Schools Catalog at <https://etca.randolph.af.mil/>

<b><u>Course Number</u></b>	<b><u>Course Title</u></b>	<b><u>Location</u></b>
E3ABR2E231 01ZC	Network Infrastructure Systems Apprentice	Keesler
E3AZR2E251 02AB	AN\TYQ-23 Modular Control Equipment (MCE) Organizational Maintenance	Keesler
E7AST2E251 03AA	KG-96\KGR-96 Depot Maintenance	Lackland
E7AST2E251 03BA	TSEC/KI-36 Depot Maintenance	Lackland
E7AST2E251 03EA	TSEC/KG-46 Depot Maintenance	Lackland
E7AST2E251 03HA	TSEC/KI-45 Depot Maintenance	Lackland
E7AST2E251 03IA	KG-45 Depot Maintenance	Lackland
E7AST2E251 03JA	Generic Depot Maintenance	Lackland
E7AST2E251 03KA	KG-44B Depot Maintenance	Lackland
E7AST2E251 03LA	YK-5/12 Depot Maintenance	Lackland
E7AST2E251 03MA	CI-1 Limited Maintenance	Lackland
E7AST2E251 03OA	KOK-22 & KOK-22A Depot Maintenance	Lackland
E7AST2E251 03PA	TSEC/KG-2288 Depot Maintenance	Lackland
E7AST2E251 03QA	MYK-17 Depot Maintenance	Lackland
E7AST2E251 02EB	Global Broadcast Service (GBS) Systems	Keesler
E7AST2E251 03RA	TSEC/KG-30 Series Depot Maintenance	Lackland
E7AST2E271 03SA	TSEC/KI-22 Depot Maintenance	Lackland
E7AST2E271 03TA	TSEC/KG-144 Lightweight De-cryptor Unit (LDU) Depot Maintenance	Lackland
X5AZA2E251 0A1A	Spectrum High-Powered Workstation Maintenance Training	Fort Huachuca
E3AZR2EXXX 01BA	C-E Maintenance Stan Eval Procedures	Keesler
L3OARXXXXX 0T3A	TEMPEST Fundamentals (Emissions Security (EMSEC) Fundamentals)	Lackland

## **Section E - MAJCOM Unique Requirements**

7. There are currently no MAJCOM unique requirements. This area is reserved.